FIG.1

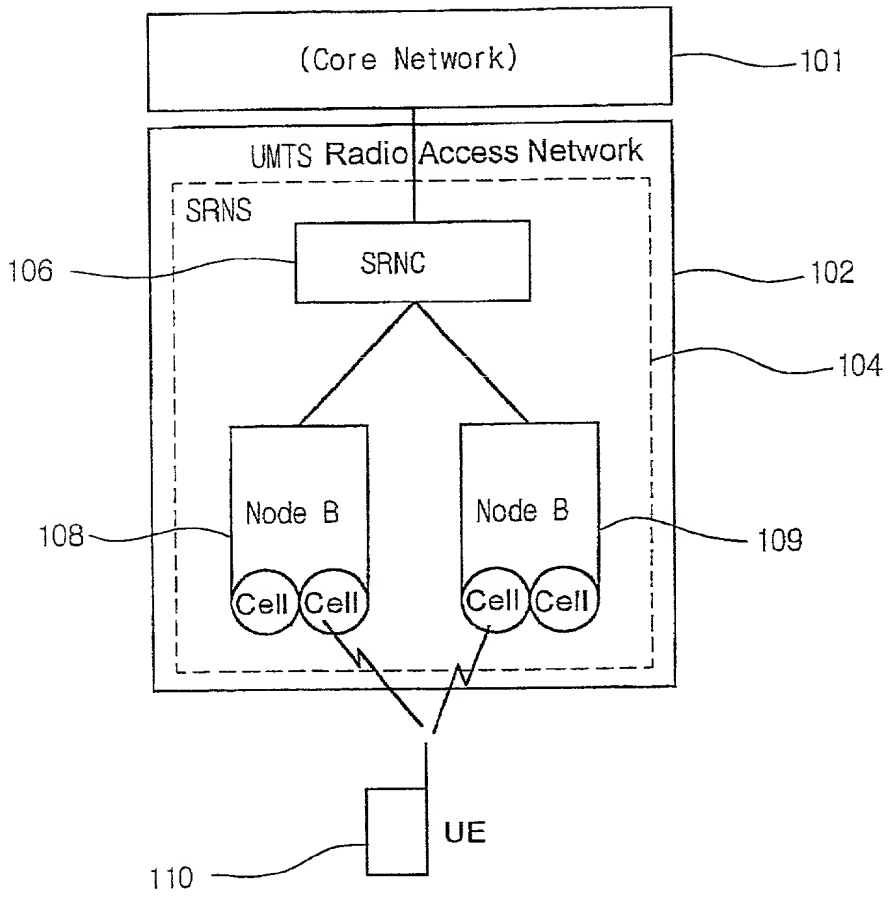

(Core Network)
101
UMTS Radio Access Network
SRNS
SRNC
106
102
104
Node B
Node B
108
109
Cell
Cell
Cell
Cell
UE
110

FIG.2

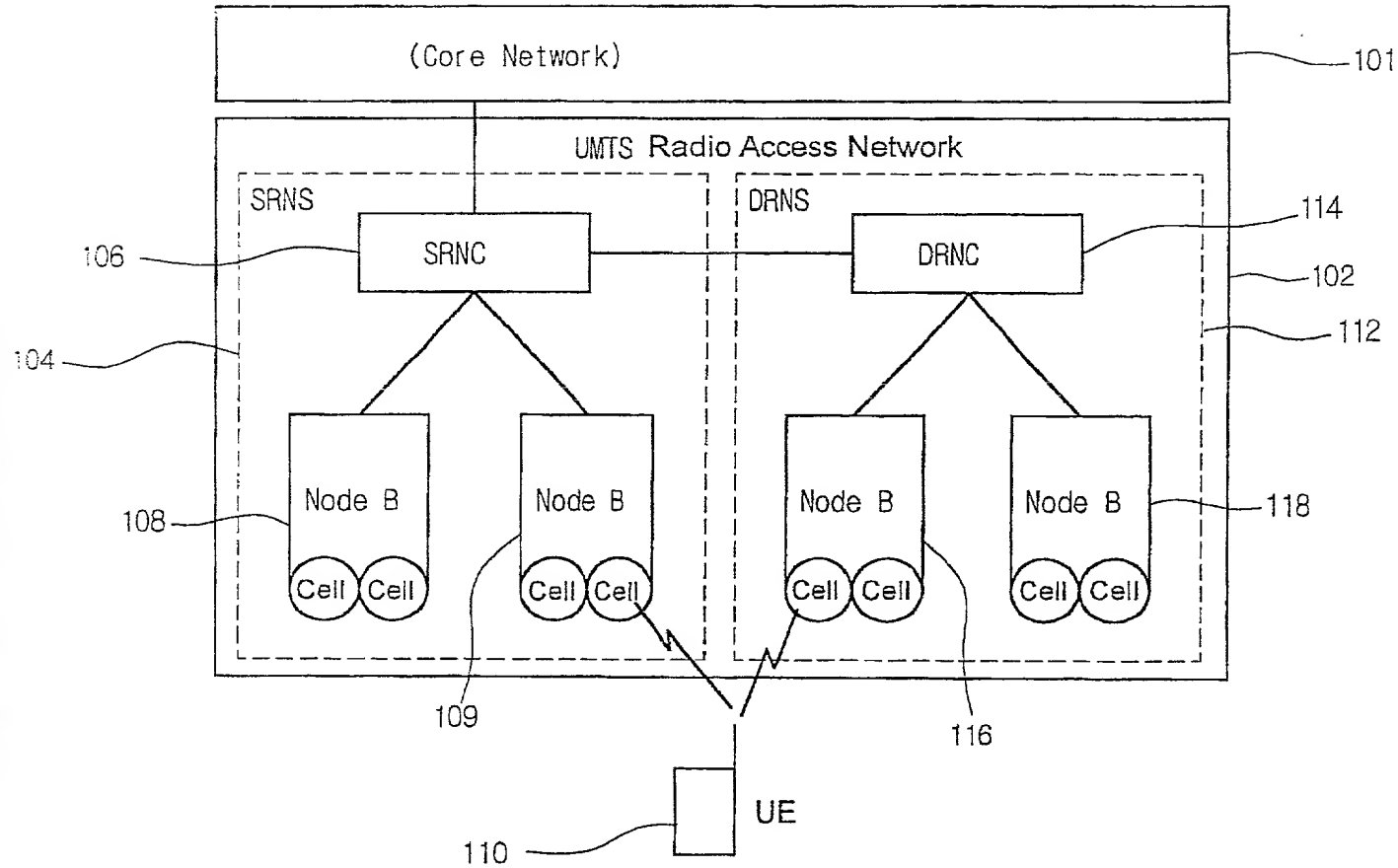

(Core Network)
101
UMTS Radio Access Network
SRNS
DRNS
SRNC
DRNC
106
114
102
112
104
Node B
Node B
Node B
Node B
Cell
Cell
Cell
Cell
Cell
Cell
Cell
Cell
108
118
109
116
UE
110

FIG.3

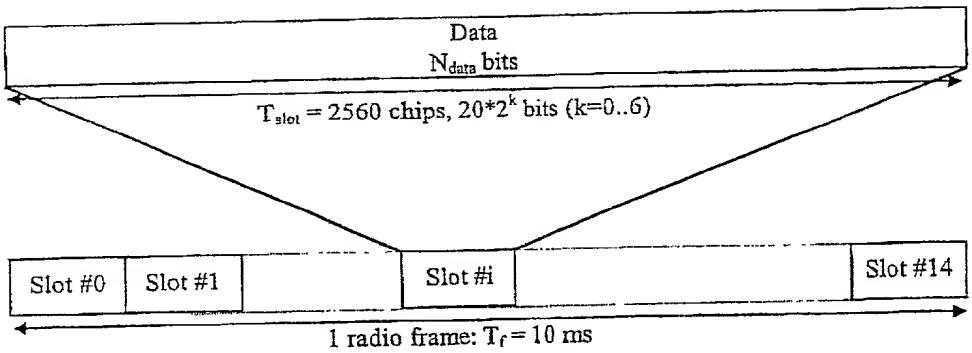

Data
N_{data} bits
T_{slot} = 2560 chips, $20*2^k$ bits (k=0..6)
Slot #0
Slot #1
Slot #i
Slot #14
1 radio frame: T_f = 10 ms

FIG.4

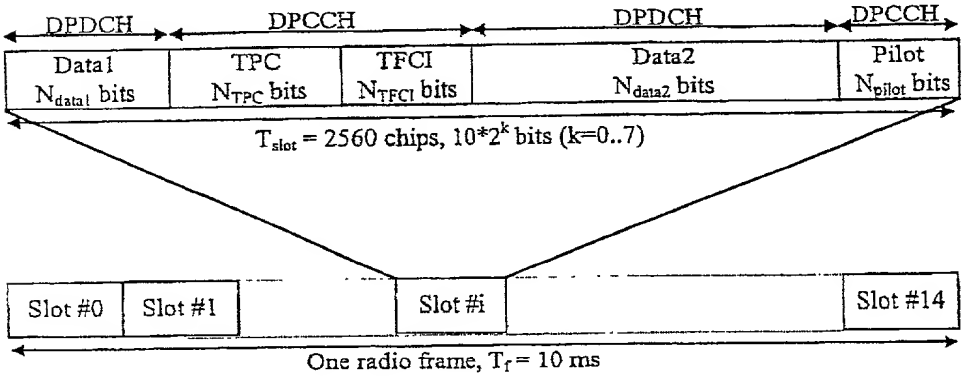

DPDCH
DPCCH
DPDCH
DPCCH
Data1
N_{data1} bits
TPC
N_{TPC} bits
TFCI
N_{TFCI} bits
Data2
N_{data2} bits
Pilot
N_{pilot} bits
T_{slot} = 2560 chips, $10*2^k$ bits (k=0..7)
Slot #0
Slot #1
Slot #i
Slot #14
One radio frame, T_f = 10 ms

FIG.5

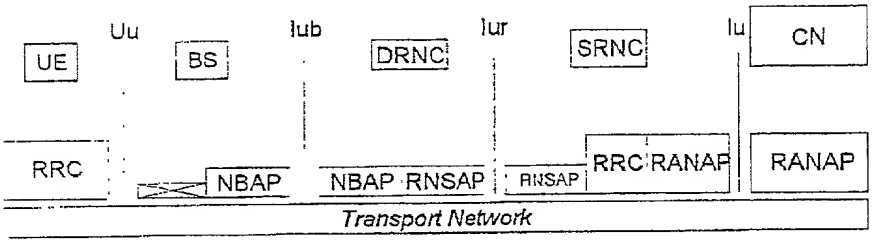


FIG.6

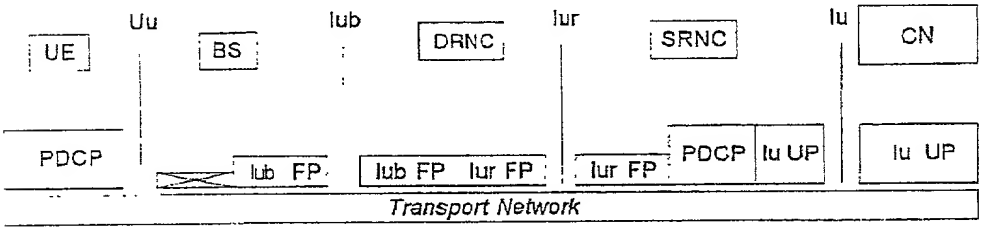


FIG.7

Control frame class	Coding
Outer loop power control	0000 0001
timing adjustment	0000 0010
DL synchronization	0000 0011
UL synchronization	0000 0100
DL signalling for DSCH	0000 0101
DL Node synchronization	0000 0110
UL Node synchronization	0000 0111
Rx Timing Deviation	0000 1000
Radio Interface Parameter Update	0000 1001
Timing Advance	0000 1010

FIG.8

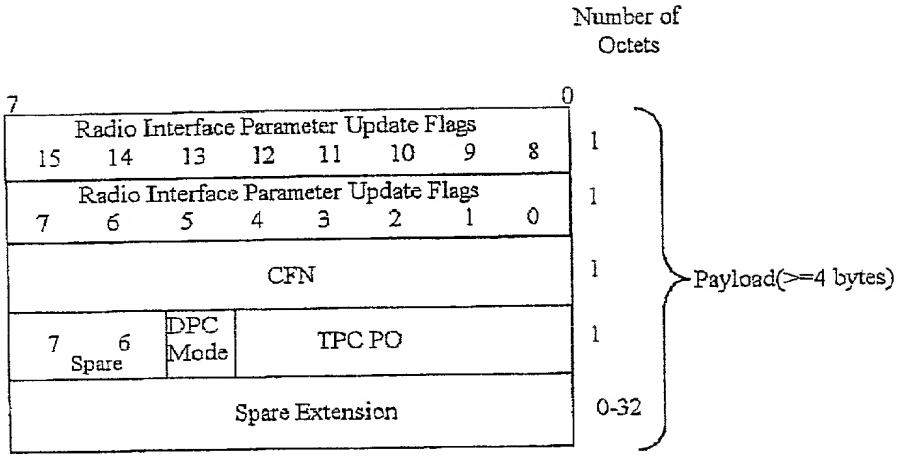

Number of Octets
7
0
Radio Interface Parameter Update Flags
15 14 13 12 11 10 9 8
1
Radio Interface Parameter Update Flags
7 6 5 4 3 2 1 0
1
CFN
1
7 6
Spare
DPC Mode
TPC PO
1
Spare Extension
0-32
Payload(>=4 bytes)

FIG.9A

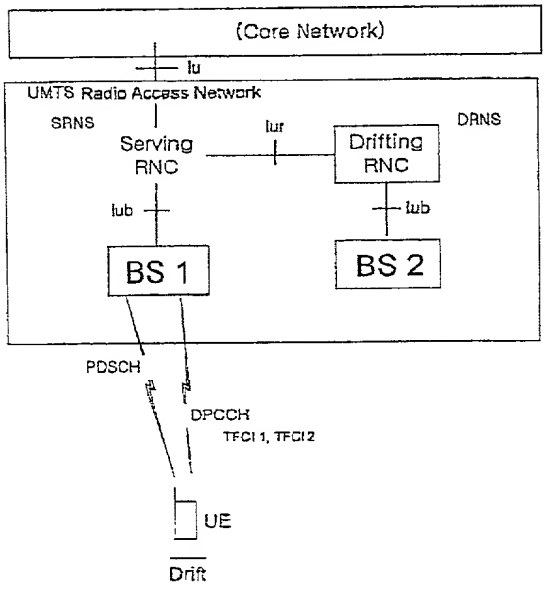

(Core Network)
Iu
UMTS Radio Access Network
SRNS
Serving RNC
Iur
Drifting RNC
DRNS
Iub
Iub
BS 1
BS 2
PDSCH
DPCCH
TFCI 1, TFCI 2
UE
Drift

FIG.9B

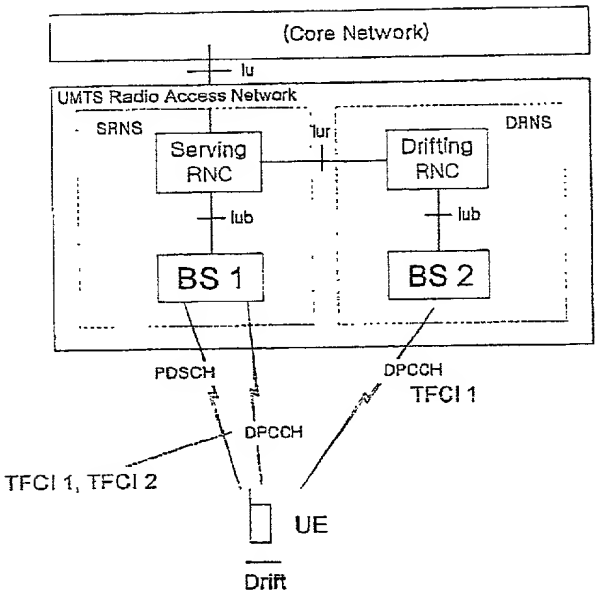

(Core Network)
Iu
UMTS Radio Access Network
SRNS
Serving RNC
Iur
DRNS
Drifting RNC
Iub
Iub
BS 1
BS 2
PDSCH
DPCCH
TFCI 1
DPCCH
TFCI 1, TFCI 2
UE
Drift

FIG.9C

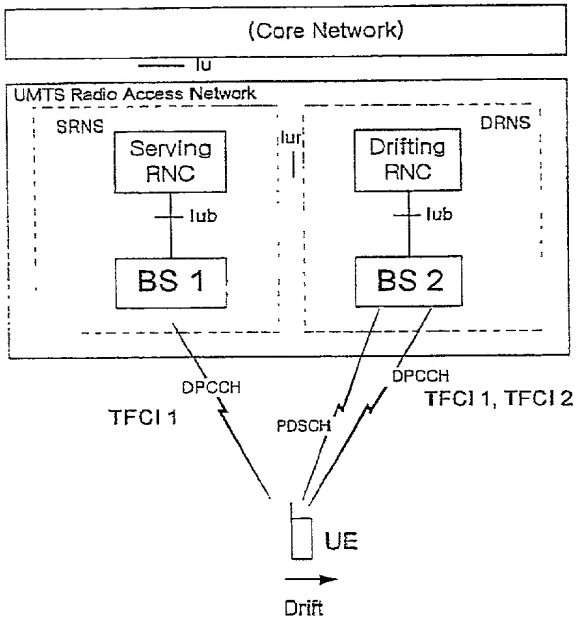

(Core Network)
Iu
UMTS Radio Access Network
SRNS
Serving RNC
Iur
DRNS
Drifting RNC
Iub
Iub
BS 1
BS 2
DPCCH
TFCI 1
PDSCH
DPCCH
TFCI 1, TFCI 2
UE
Drift

FIG.9D

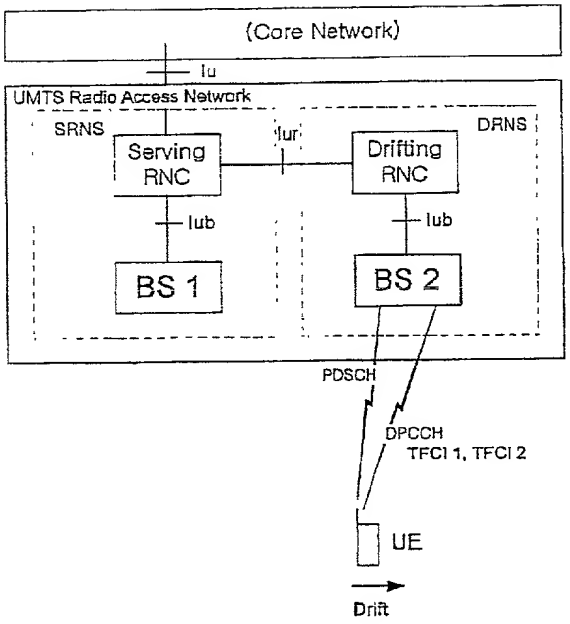


FIG.10A

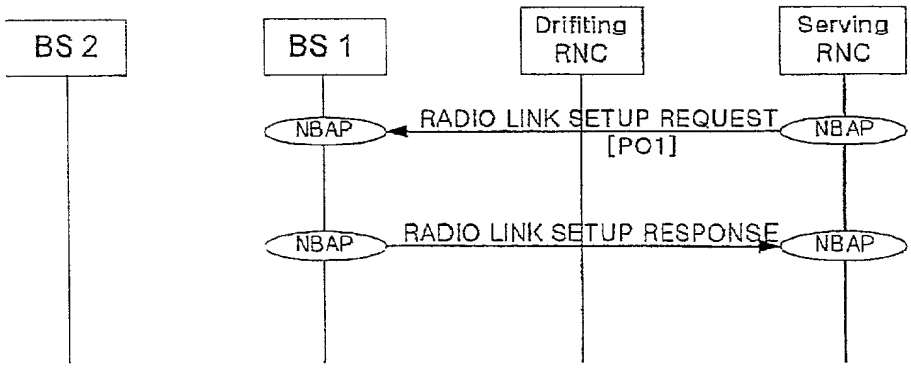


FIG.10B

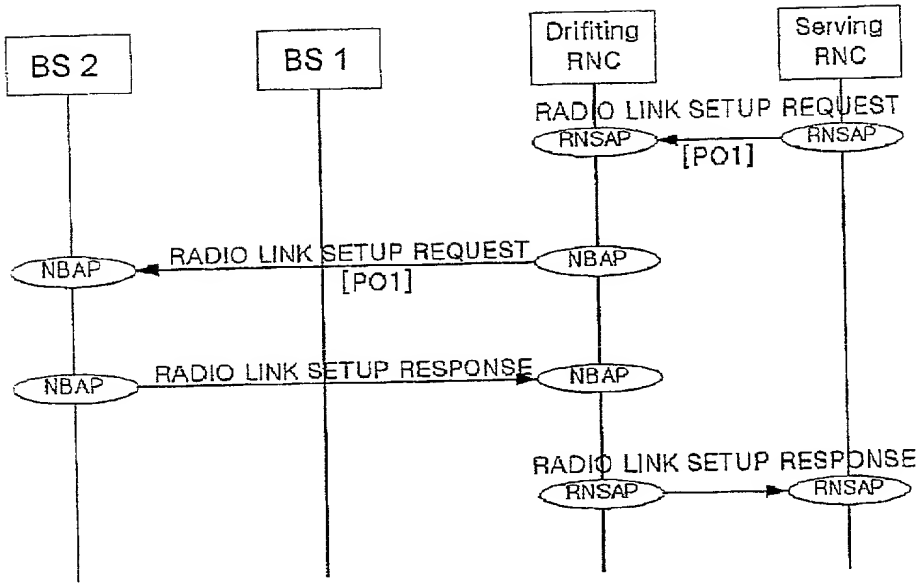


FIG.11

Slot Format #I	Channel Bit Rate (kbps)	Channel Symbol Rate (ksps)	SF	Bits/ Slot	DPDCH Bits/Slot		DPCCH Bits/Slot			Transmitted slots per radio frame N_{Tr}
					N_{Data1}	N_{Data2}	N_{TPC}	N_{TFCI}	N_{Pilot}	
0	15	7.5	512	10	0	4	2	0	4	15
1	15	7.5	512	10	0	2	2	2	4	15
2	30	15	256	20	2	14	2	0	2	15
3	30	15	256	20	2	12	2	2	2	15
4	30	15	256	20	2	12	2	0	4	15
5	30	15	256	20	2	10	2	2	4	15
6	30	15	256	20	2	8	2	0	8	15
7	30	15	256	20	2	6	2	2	8	15
8	60	30	128	40	6	28	2	0	4	15
9	60	30	128	40	6	26	2	2	4	15
10	60	30	128	40	6	24	2	0	8	15
11	60	30	128	40	6	22	2	2	8	15
12	120	60	64	80	12	48	4	8*	8	15
13	240	120	32	160	28	112	4	8*	8	15
14	480	240	16	320	56	232	8	8*	16	15
15	960	480	8	640	120	488	8	8*	16	15
16	1920	960	4	1280	248	1000	8	8*	16	15

FIG.12

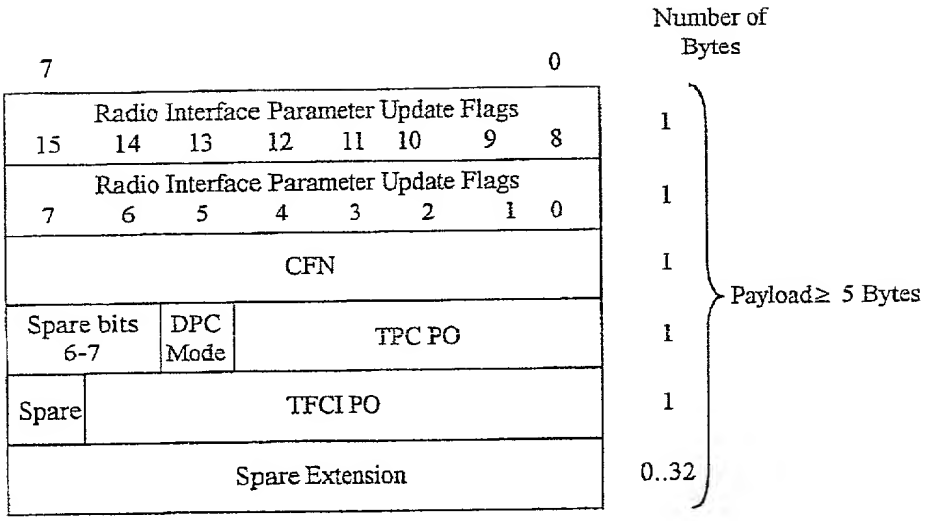

Number of Bytes
7
0
Radio Interface Parameter Update Flags
15 14 13 12 11 10 9 8
Radio Interface Parameter Update Flags
7 6 5 4 3 2 1 0
CFN
Spare bits 6-7
DPC Mode
TPC PO
Spare
TFCI PO
Spare Extension
1
1
1
1
1
0..32
Payload≥ 5 Bytes

FIG.13

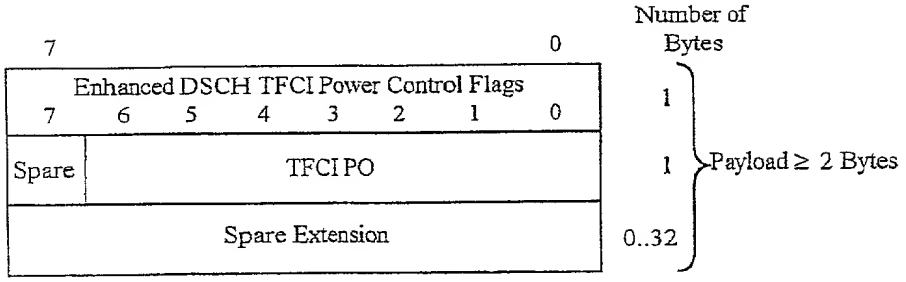

Number of Bytes
7
0
Enhanced DSCH TFCI Power Control Flags
7 6 5 4 3 2 1 0
Spare
TFCI PO
Spare Extension
1
1
0..32
Payload ≥ 2 Bytes

FIG.14A

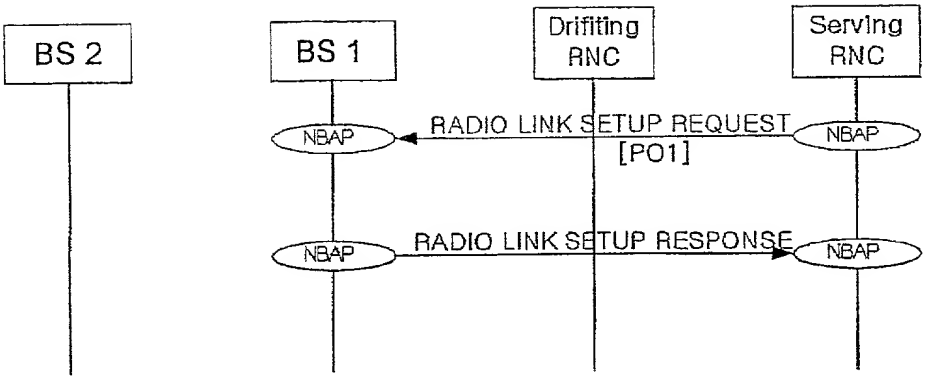


FIG.14B

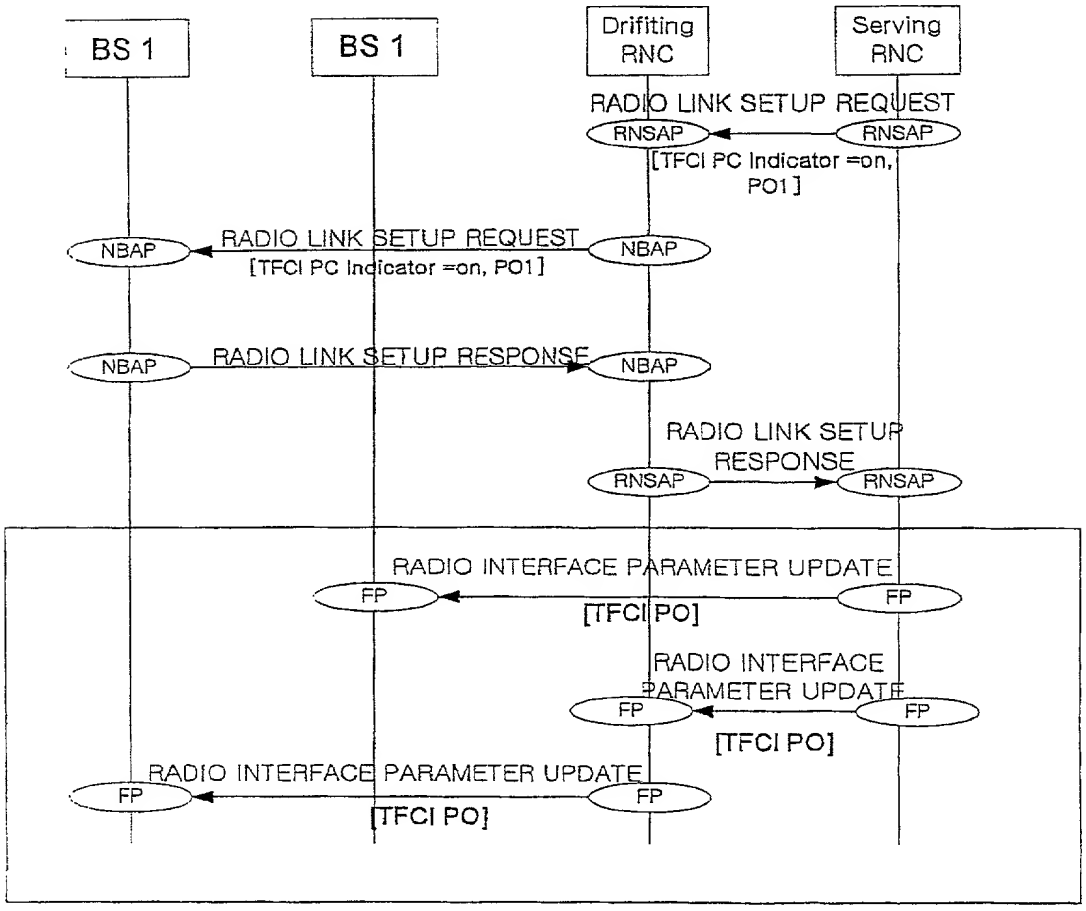


FIG.14C

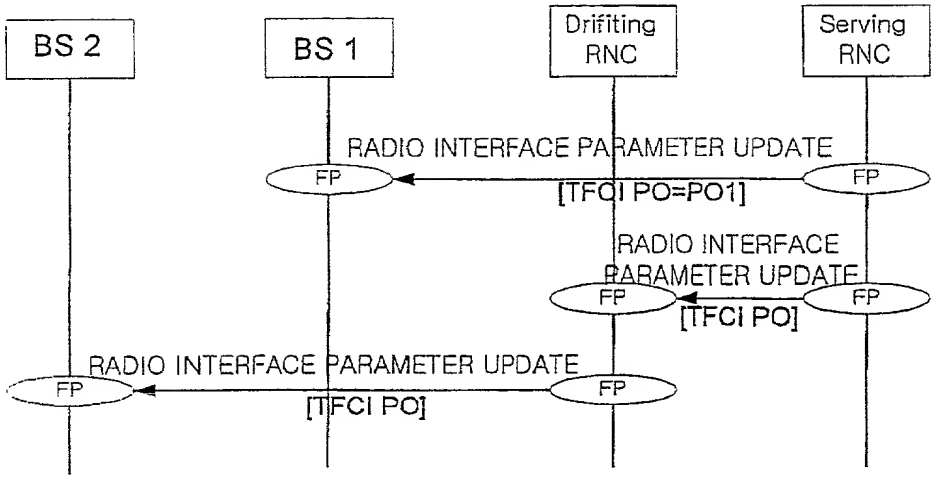


FIG.14D

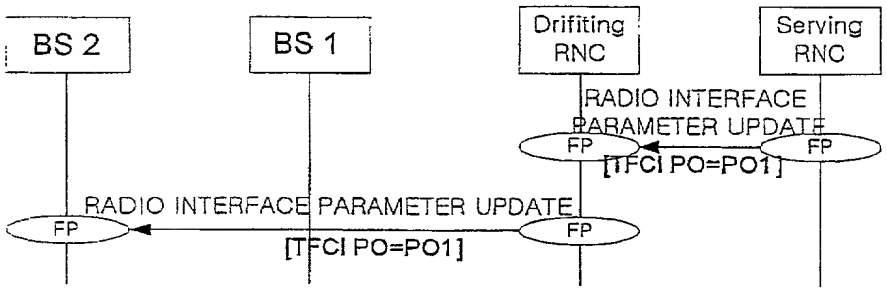


FIG.15A

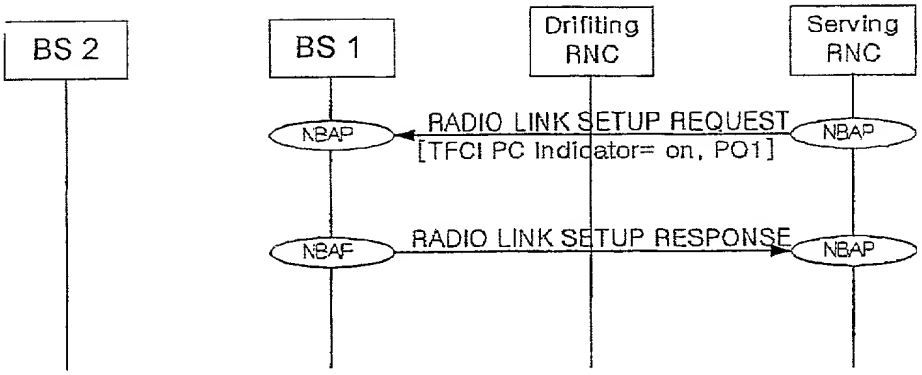


FIG.15B

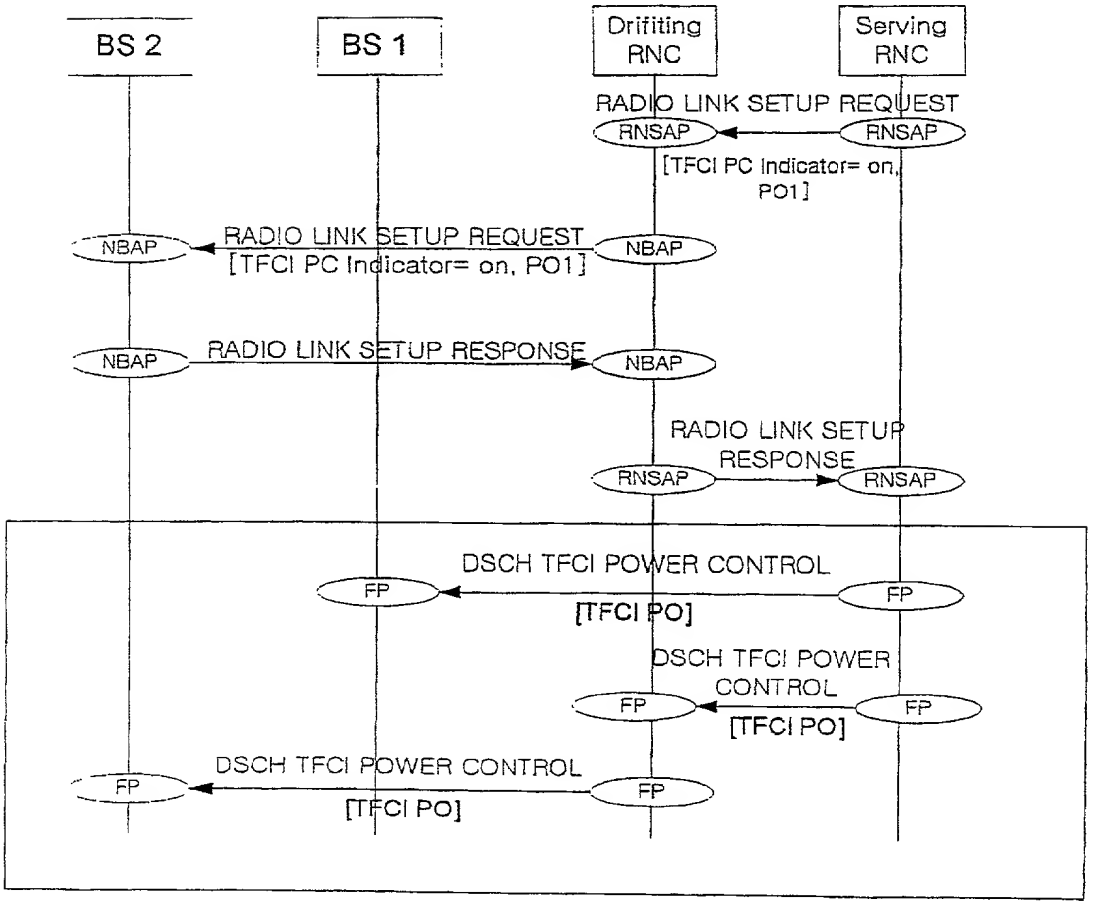


FIG.15C

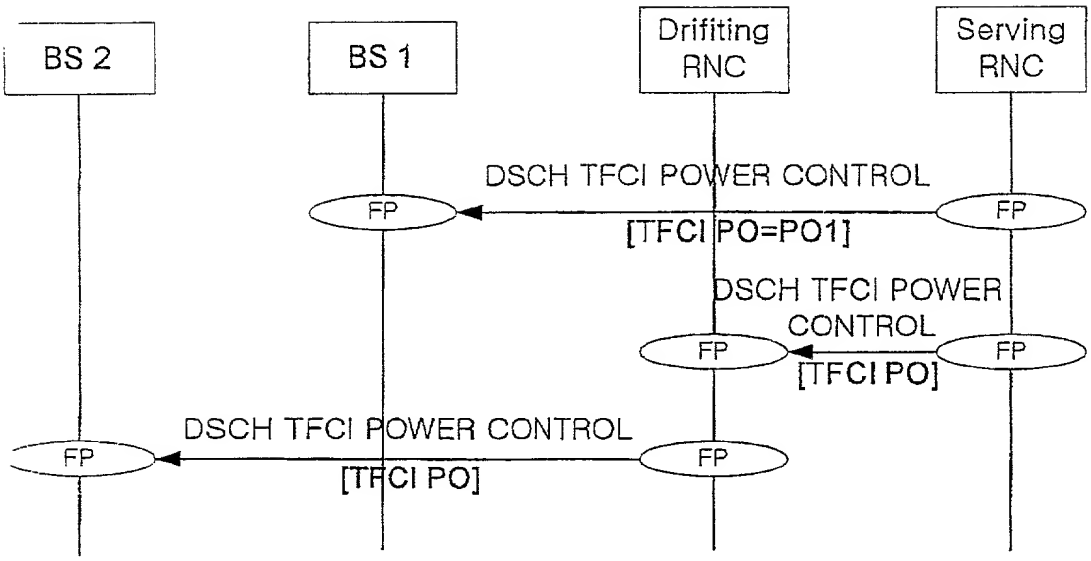


FIG.15D

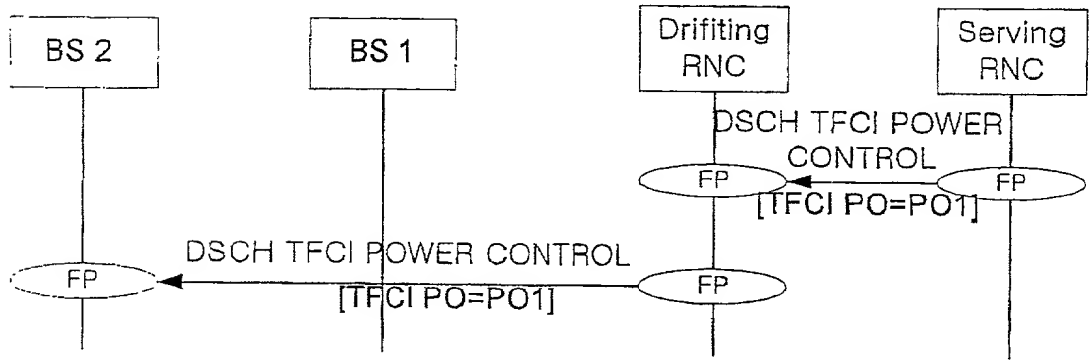


FIG.16A

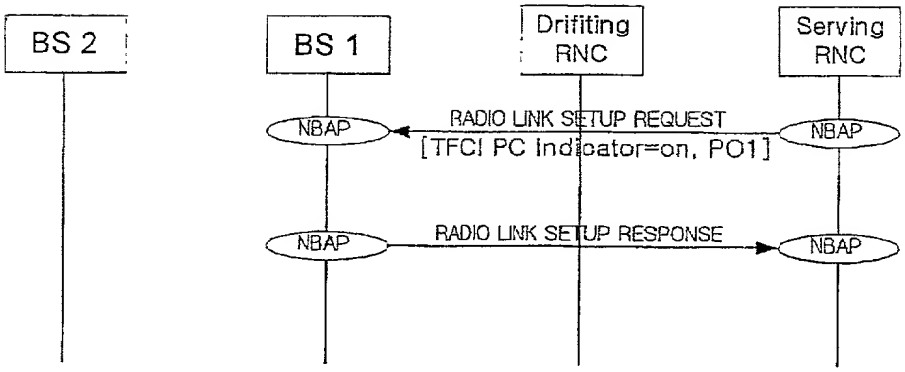

BS 2
BS 1
Drifiting RNC
Serving RNC
NBAP
RADIO LINK SETUP REQUEST
[TFCI PC Indicator=on, PO1]
NBAP
NBAP
RADIO LINK SETUP RESPONSE
NBAP

FIG.16B

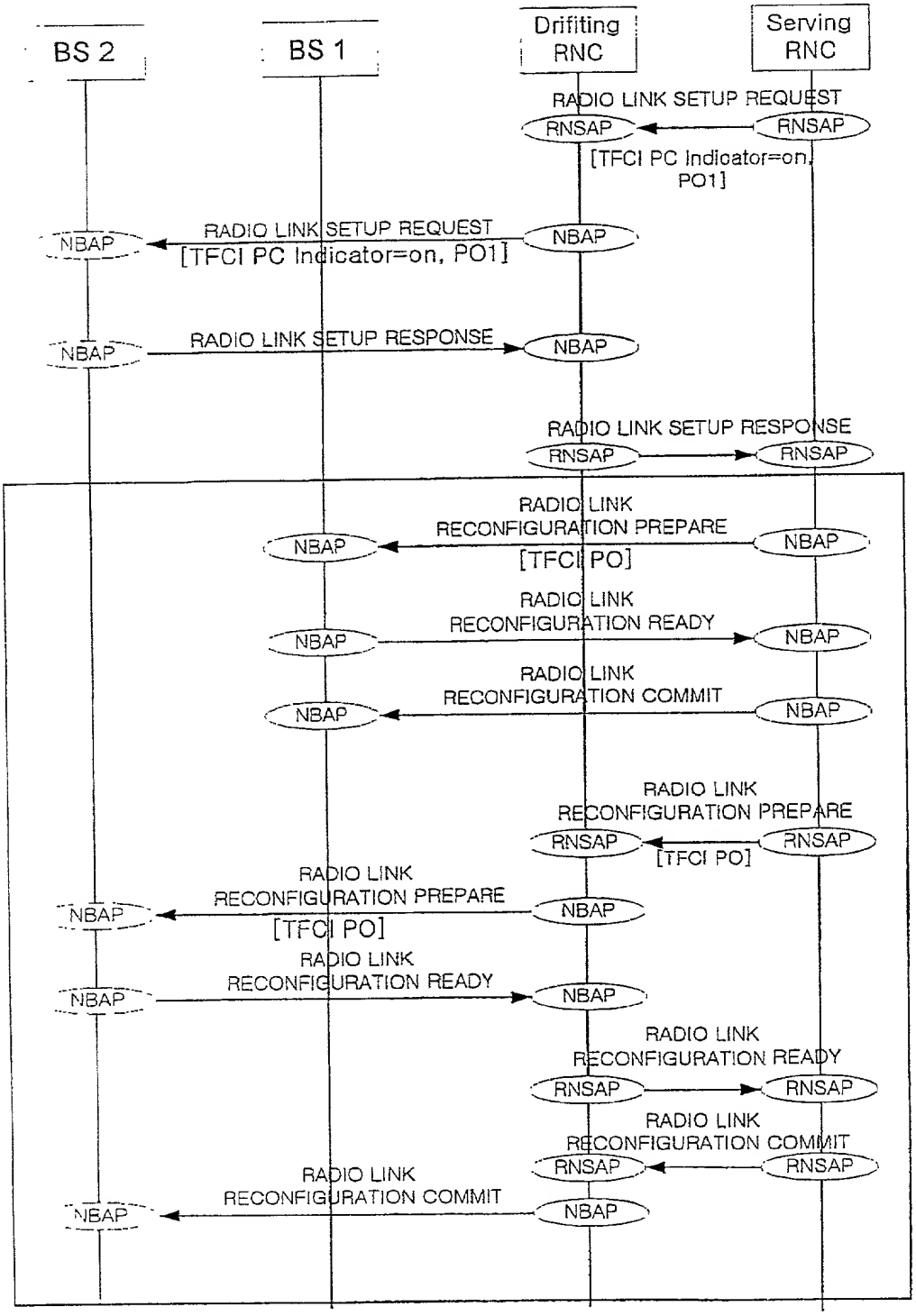

BS 2
BS 1
Drifiting RNC
Serving RNC
RADIO LINK SETUP REQUEST
RNSAP
RNSAP
[TFCI PC Indicator=on, PO1]
NBAP
RADIO LINK SETUP REQUEST
[TFCI PC Indicator=on, PO1]
NBAP
NBAP
RADIO LINK SETUP RESPONSE
NBAP
RADIO LINK SETUP RESPONSE
RNSAP
RNSAP
RADIO LINK RECONFIGURATION PREPARE
NBAP
NBAP
[TFCI PO]
RADIO LINK RECONFIGURATION READY
NBAP
NBAP
RADIO LINK RECONFIGURATION COMMIT
NBAP
NBAP
RADIO LINK RECONFIGURATION PREPARE
RNSAP
RNSAP
[TFCI PO]
RADIO LINK RECONFIGURATION PREPARE
NBAP
NBAP
[TFCI PO]
RADIO LINK RECONFIGURATION READY
NBAP
NBAP
RADIO LINK RECONFIGURATION READY
RNSAP
RNSAP
RADIO LINK RECONFIGURATION COMMIT
RNSAP
RNSAP
RADIO LINK RECONFIGURATION COMMIT
NBAP
NBAP

FIG.16C

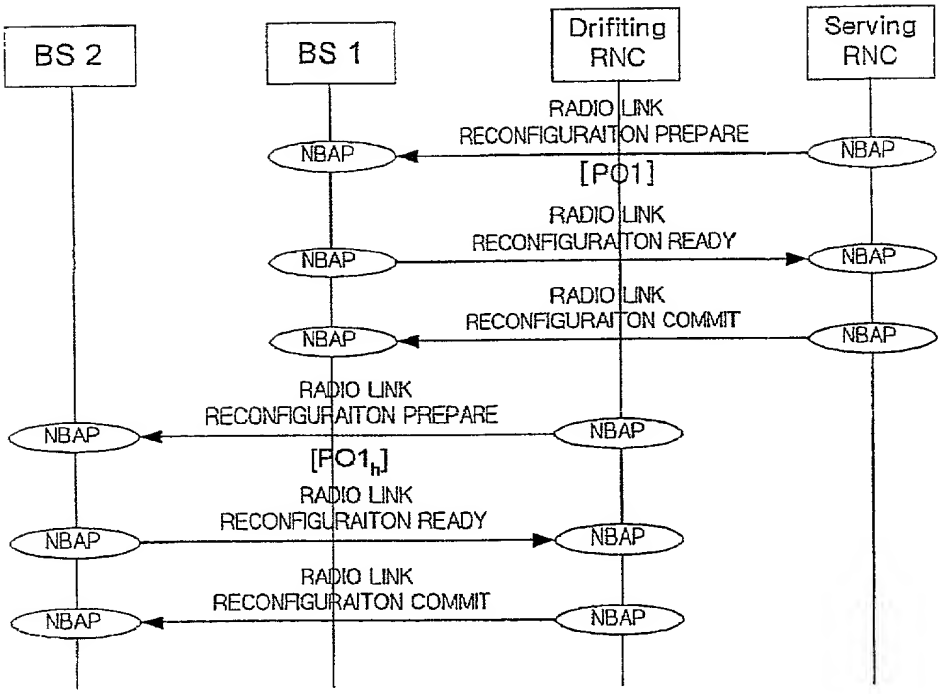


FIG.16D

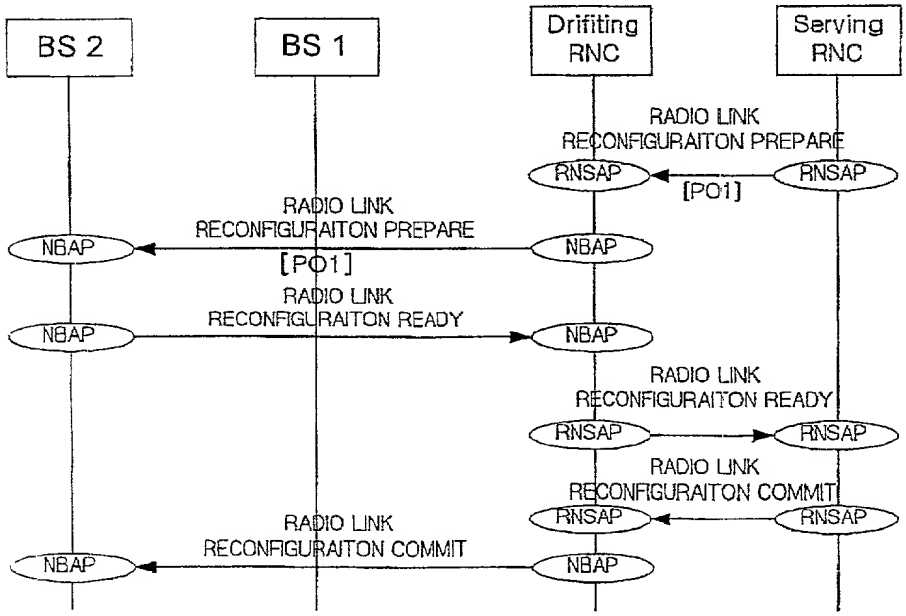


FIG.17A

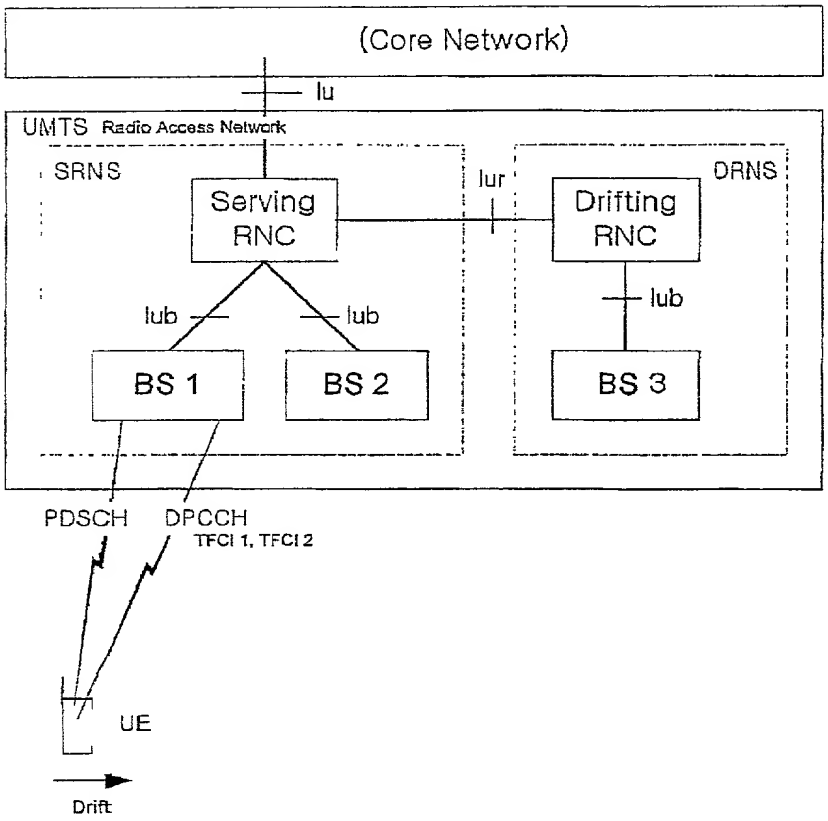


FIG.17B

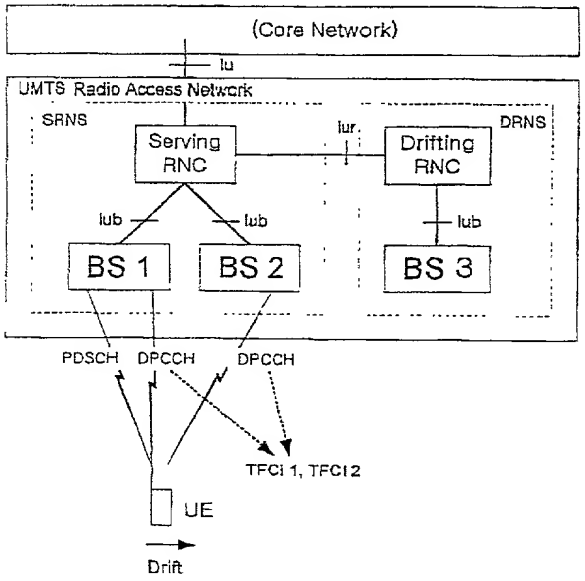


FIG.17C

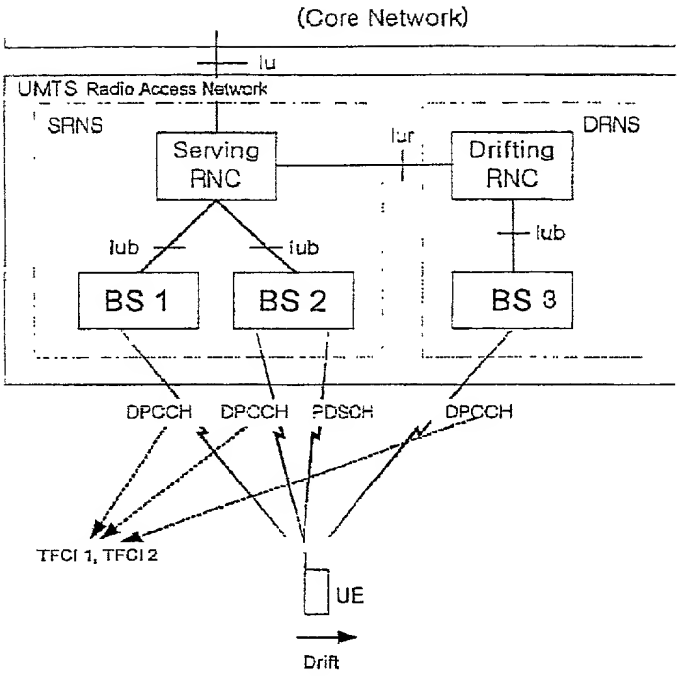


FIG.17D

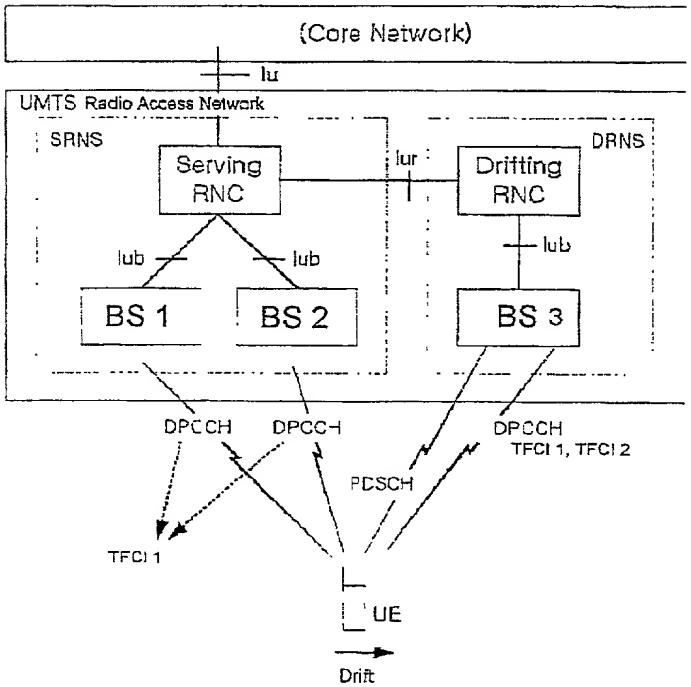


FIG.17E

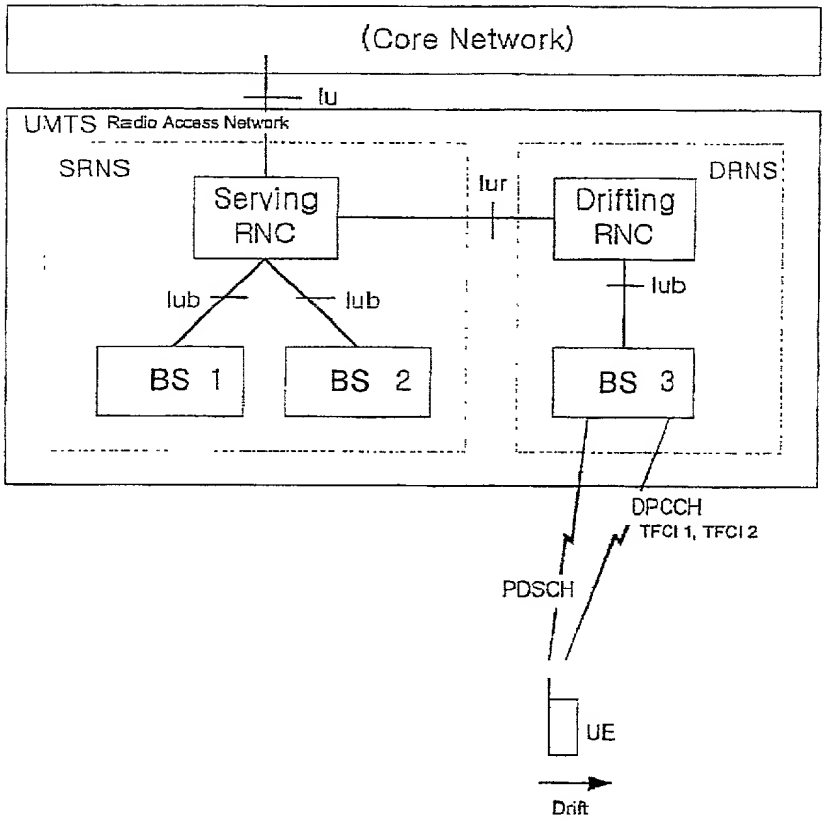

(Core Network)
Iu
UMTS Radio Access Network
SRNS
Serving RNC
Iur
Drifting RNC
DRNS
Iub
Iub
Iub
BS 1
BS 2
BS 3
DPCCH
TFCI 1, TFCI 2
PDSCH
UE
Drift

FIG.18A

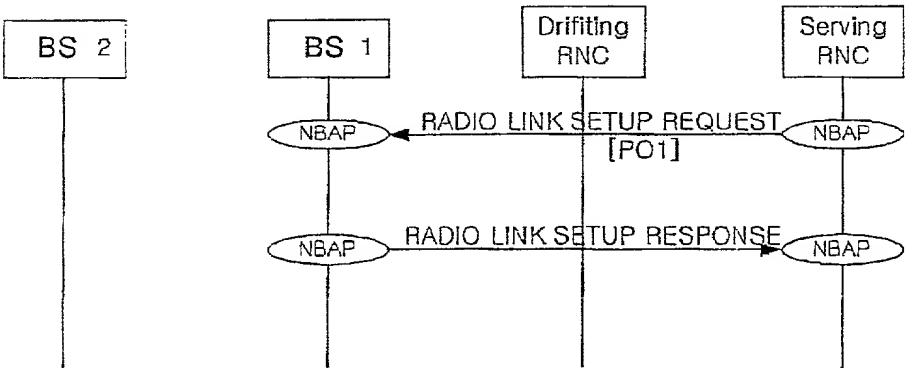


FIG.18B

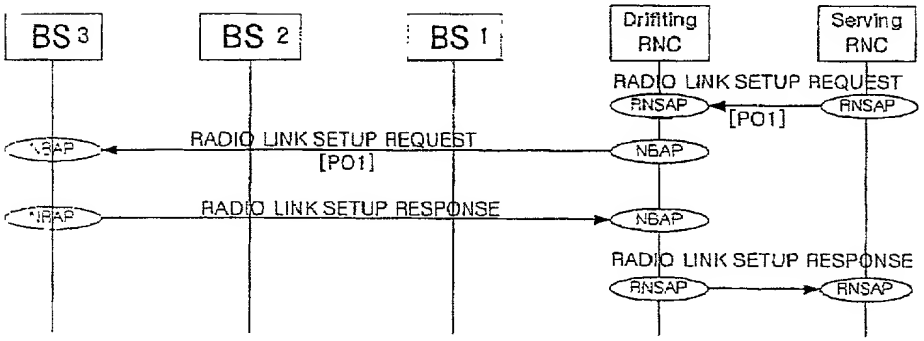


FIG.19

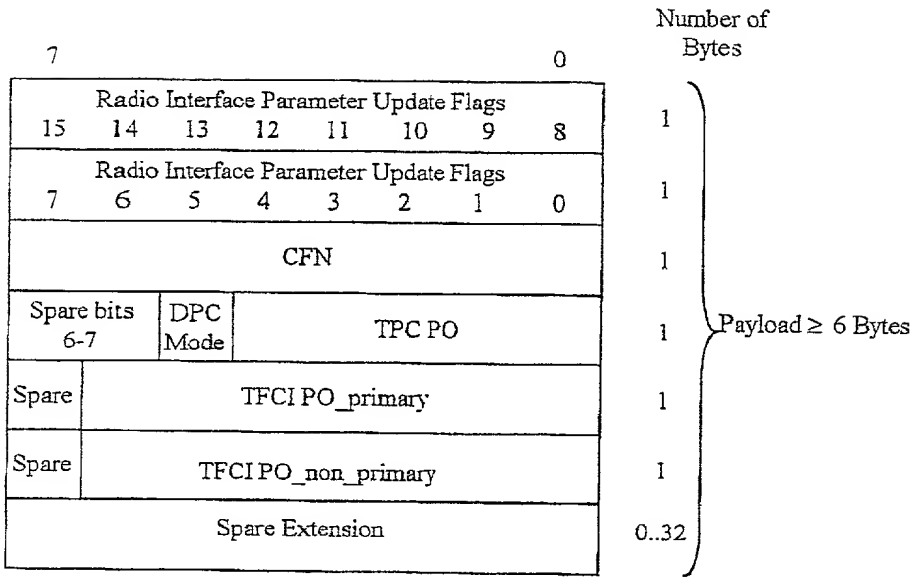

Number of Bytes
7
0
Radio Interface Parameter Update Flags
15 14 13 12 11 10 9 8
Radio Interface Parameter Update Flags
7 6 5 4 3 2 1 0
CFN
Spare bits 6-7
DPC Mode
TPC PO
Spare
TFCI PO_primary
Spare
TFCI PO_non_primary
Spare Extension
1
1
1
1
1
1
0..32
Payload ≥ 6 Bytes

FIG.20

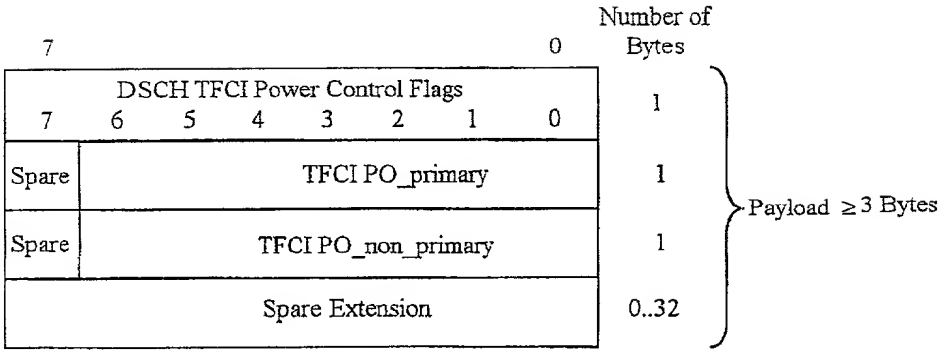

Number of Bytes
7
0
DSCH TFCI Power Control Flags
7 6 5 4 3 2 1 0
1
Spare
TFCI PO_primary
1
Spare
TFCI PO_non_primary
1
Spare Extension
0..32
Payload ≥3 Bytes

FIG.21A

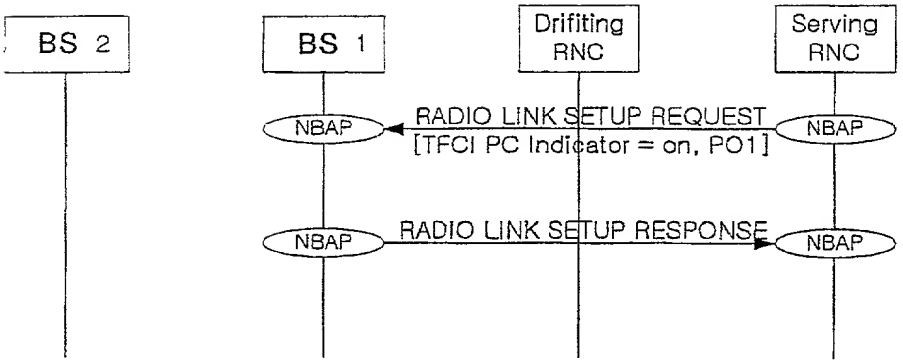


FIG.21B

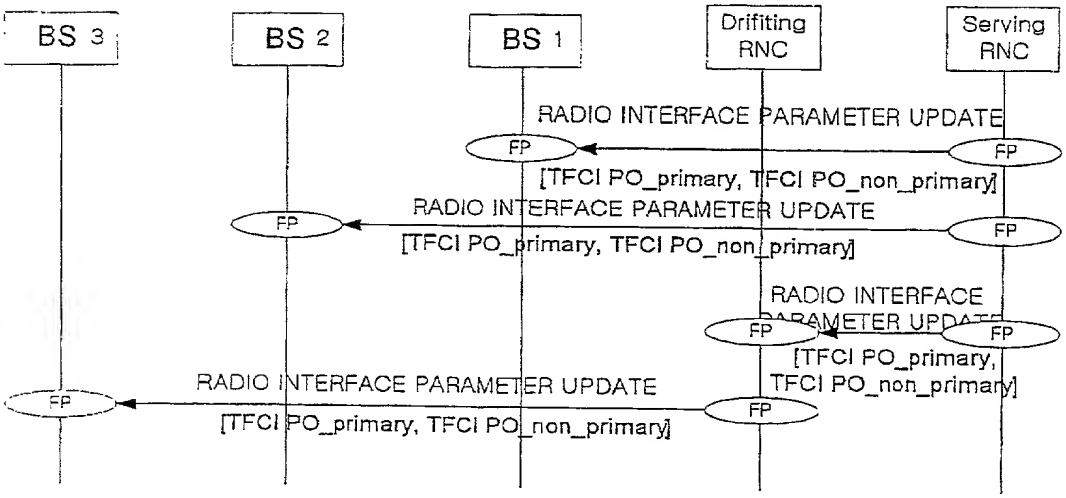
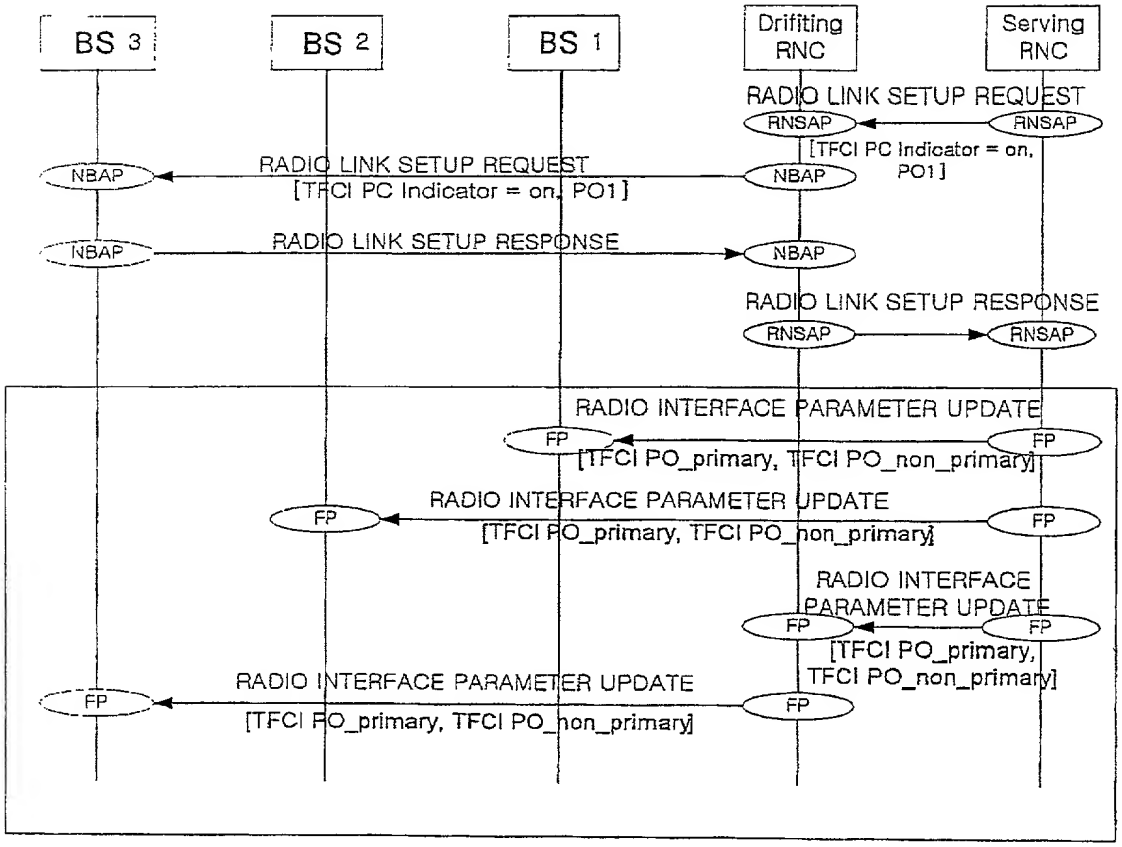


FIG.21C



EP 1 524 875 A2

FIG.21D

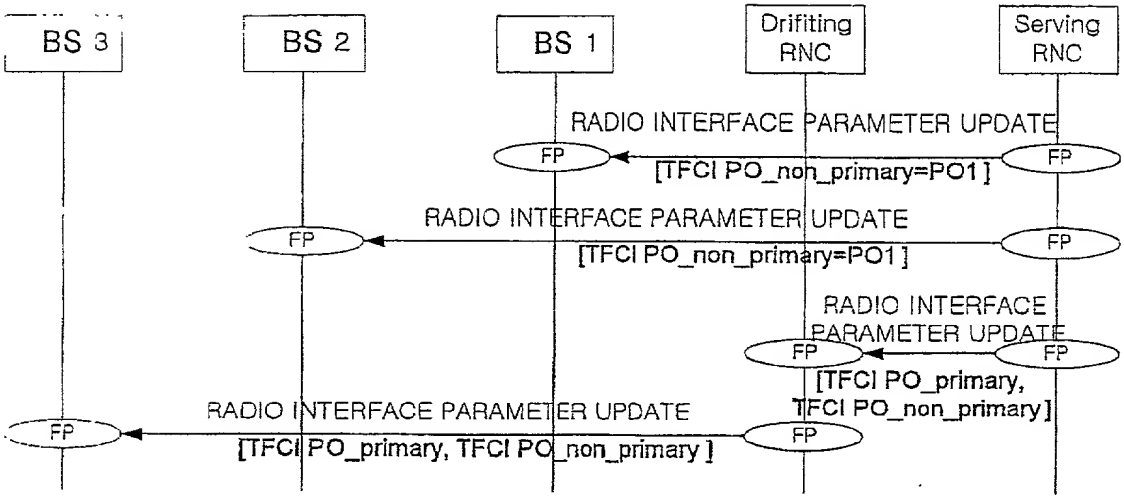


FIG.21E

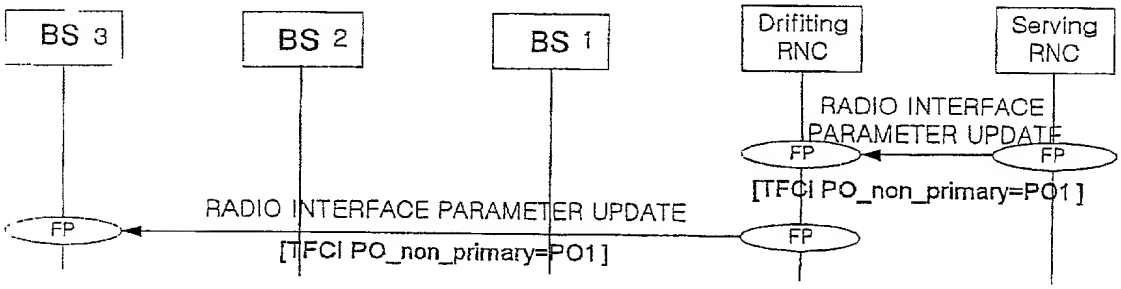


FIG.22A

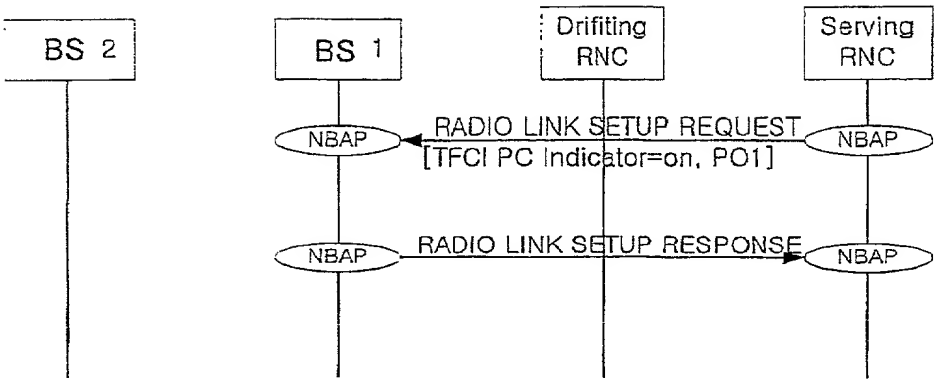


FIG.22B

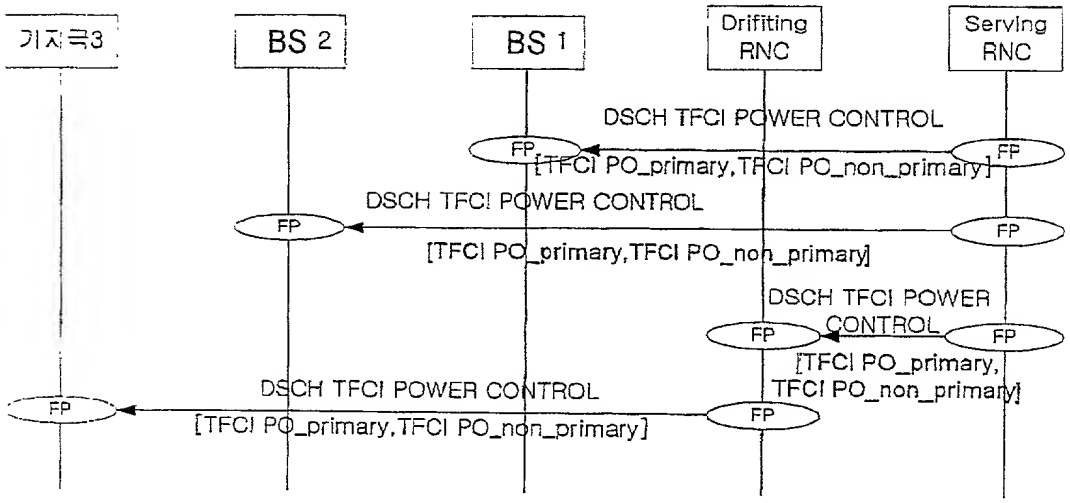


FIG.22C

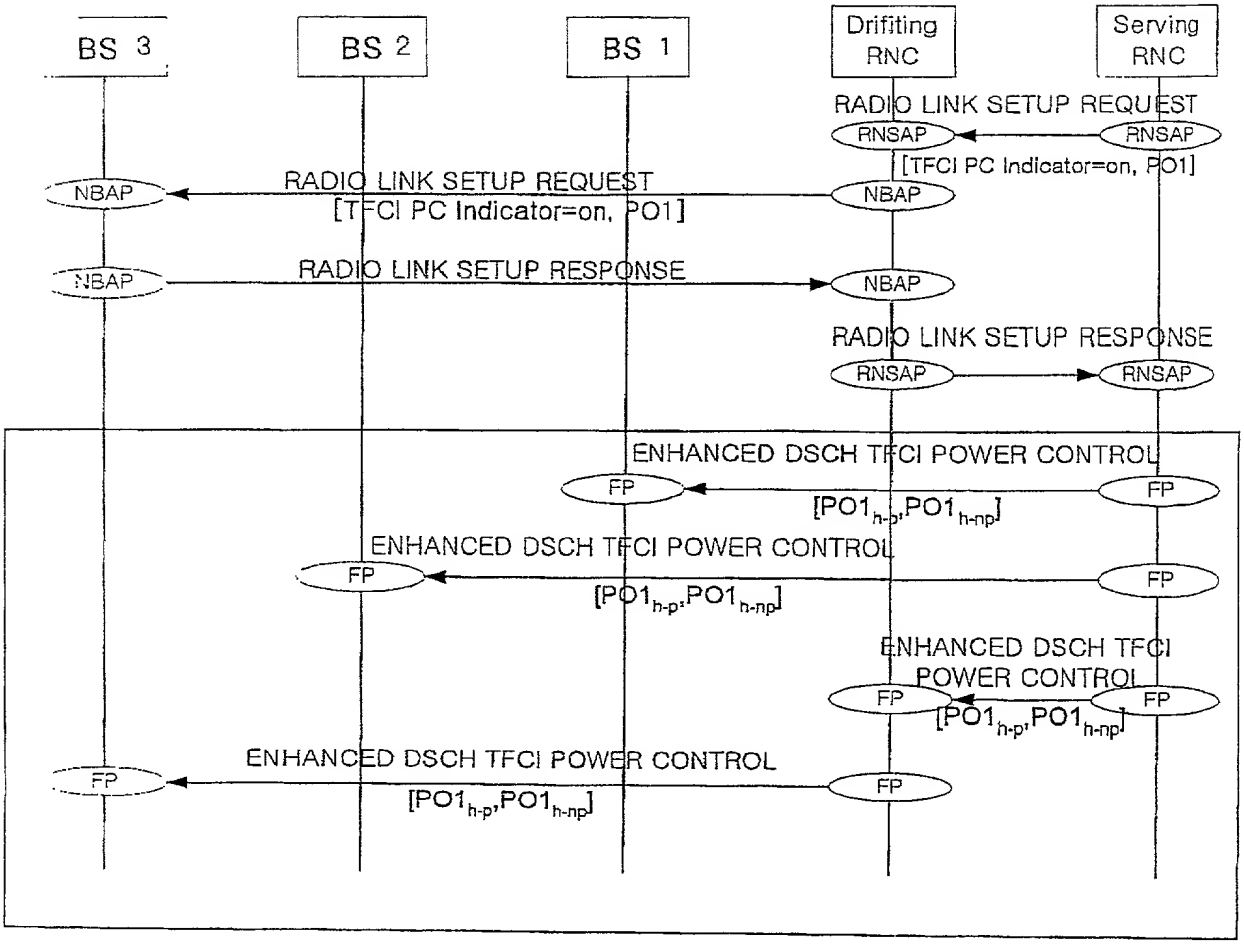

BS 3
BS 2
BS 1
Drifting RNC
Serving RNC
RADIO LINK SETUP REQUEST
RNSAP
RNSAP
[TFCI PC Indicator=on, PO1]
NBAP
RADIO LINK SETUP REQUEST
[TFCI PC Indicator=on, PO1]
NBAP
NBAP
RADIO LINK SETUP RESPONSE
NBAP
RADIO LINK SETUP RESPONSE
RNSAP
RNSAP
ENHANCED DSCH TFCI POWER CONTROL
FP
FP
[PO1h-p,PO1h-np]
ENHANCED DSCH TFCI POWER CONTROL
FP
FP
[PO1h-p,PO1h-np]
ENHANCED DSCH TFCI POWER CONTROL
FP
FP
[PO1h-p,PO1h-np]
ENHANCED DSCH TFCI POWER CONTROL
FP
FP
[PO1h-p,PO1h-np]

FIG.22D

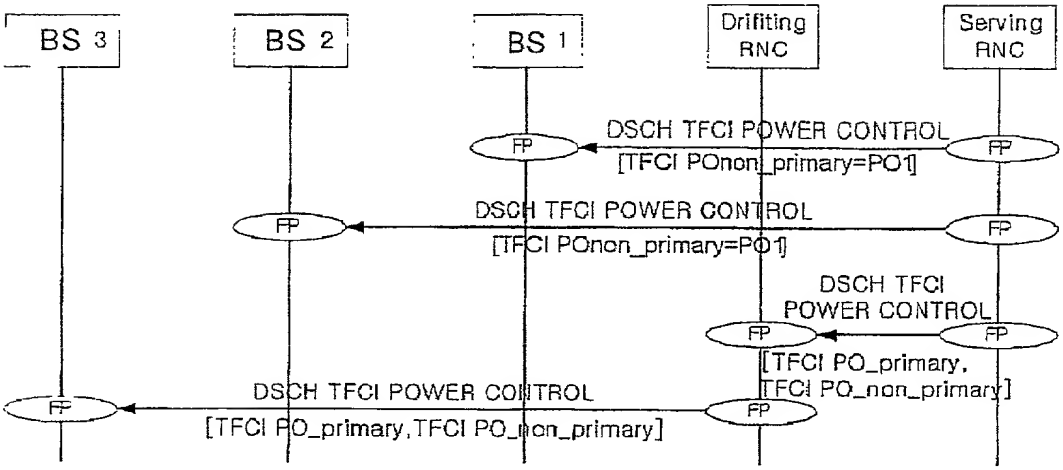


FIG.22E

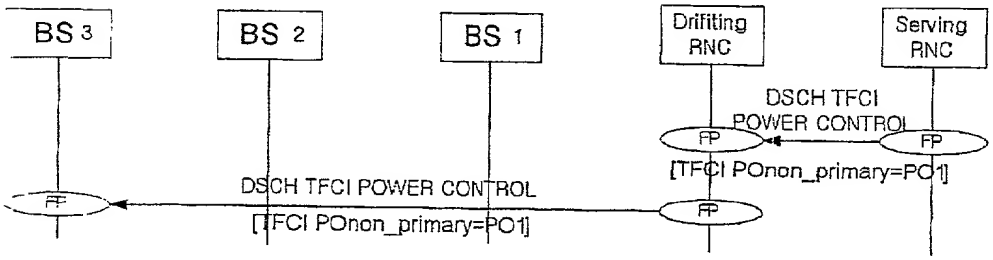


FIG.23A

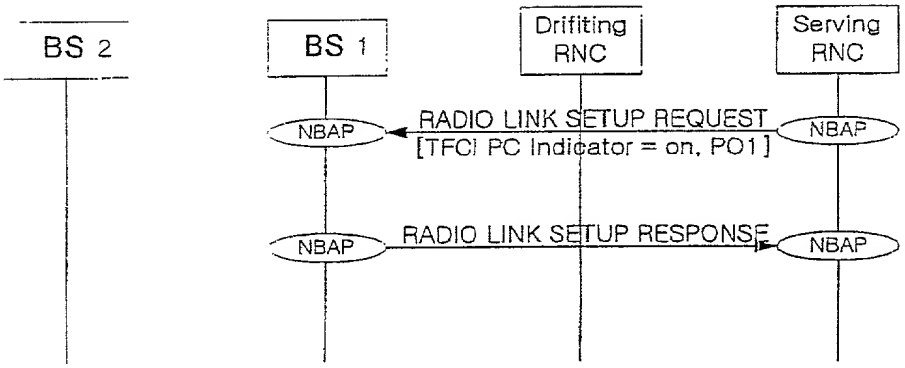


FIG.23B

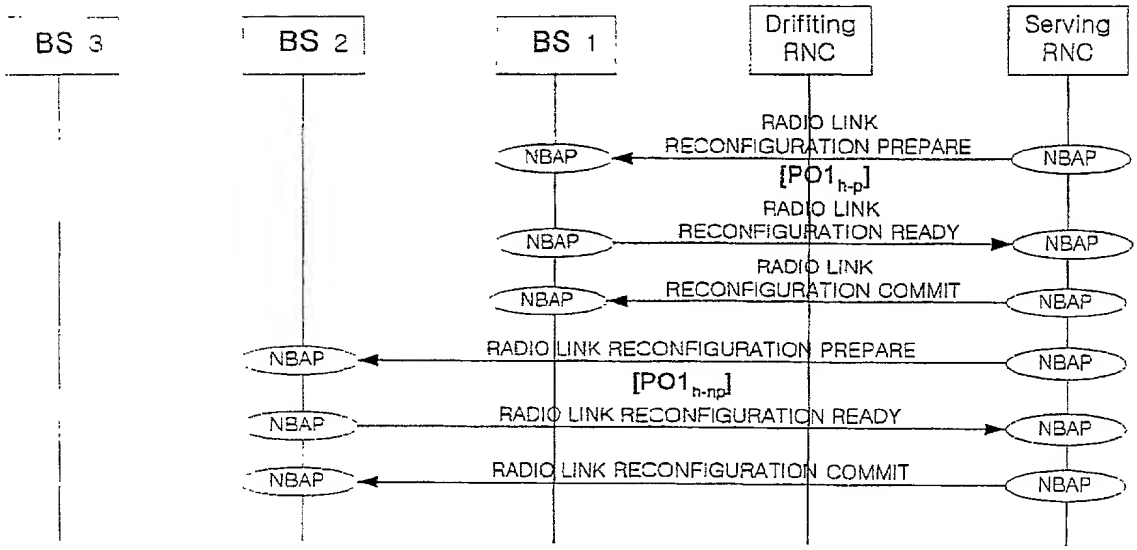


FIG.23C

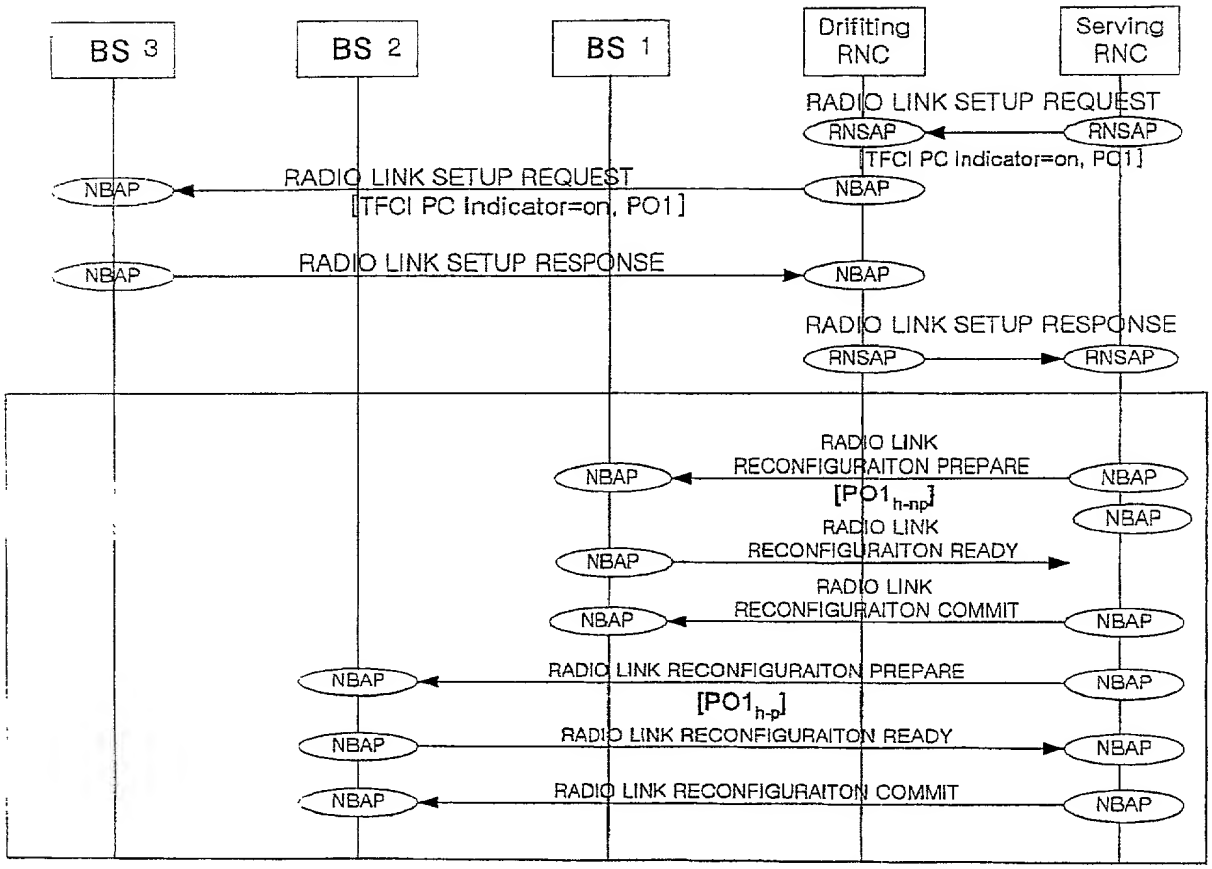

BS 3
BS 2
BS 1
Drifiting RNC
Serving RNC
RADIO LINK SETUP REQUEST
RNSAP
RNSAP
[TFCI PC Indicator=on, PO1]
NBAP
RADIO LINK SETUP REQUEST
[TFCI PC Indicator=on, PO1]
NBAP
NBAP
RADIO LINK SETUP RESPONSE
NBAP
RADIO LINK SETUP RESPONSE
RNSAP
RNSAP
RADIO LINK RECONFIGURAITON PREPARE
NBAP
NBAP
[PO1h-np]
NBAP
RADIO LINK RECONFIGURAITON READY
NBAP
RADIO LINK RECONFIGURAITON COMMIT
NBAP
NBAP
RADIO LINK RECONFIGURAITON PREPARE
NBAP
NBAP
[PO1h-p]
RADIO LINK RECONFIGURAITON READY
NBAP
NBAP
RADIO LINK RECONFIGURAITON COMMIT
NBAP
NBAP

FIG.23D

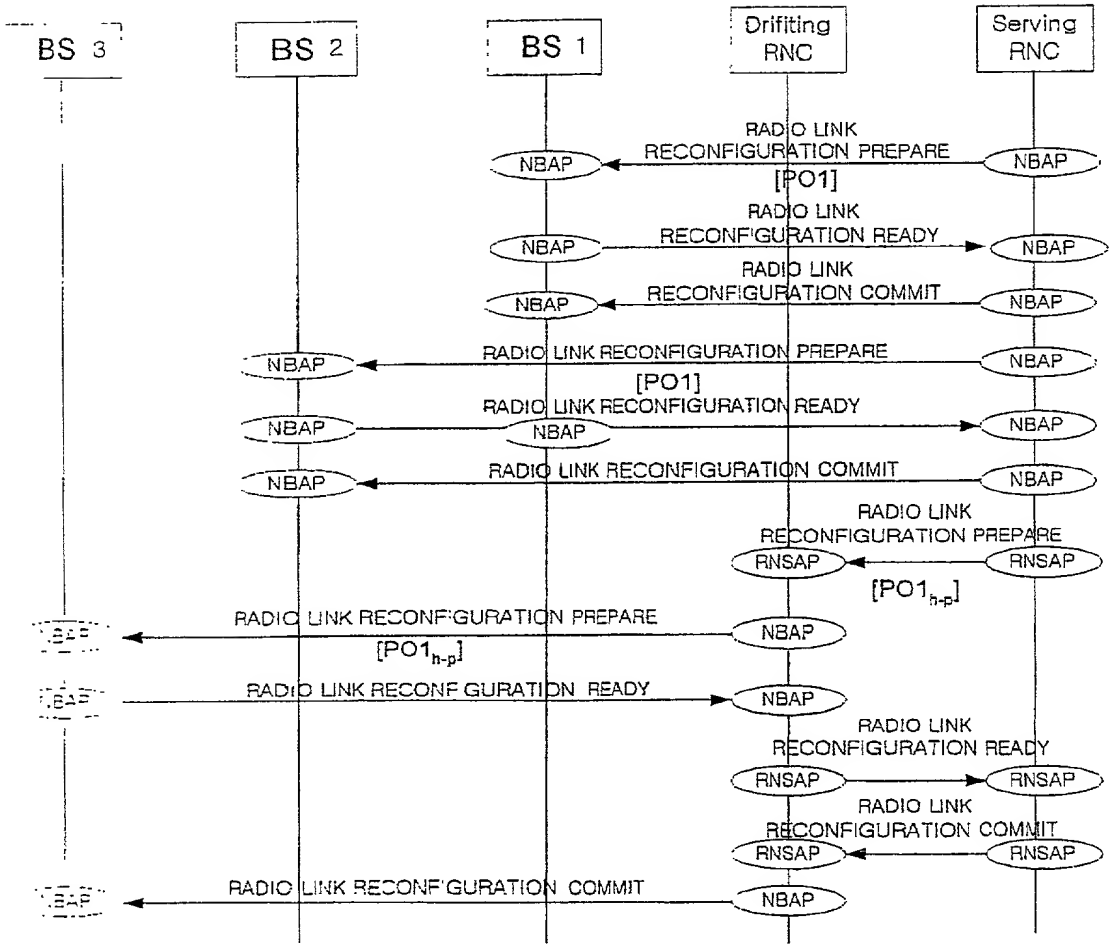

BS 3
BS 2
BS 1
Drifiting RNC
Serving RNC
RADIO LINK RECONFIGURATION PREPARE
[PO1]
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION COMMIT
RADIO LINK RECONFIGURATION PREPARE
[PO1]
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION COMMIT
RADIO LINK RECONFIGURATION PREPARE
[PO1h-p]
RADIO LINK RECONFIGURATION PREPARE
[PO1h-p]
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION COMMIT
RADIO LINK RECONFIGURATION COMMIT
NBAP
RNSAP

FIG.23E

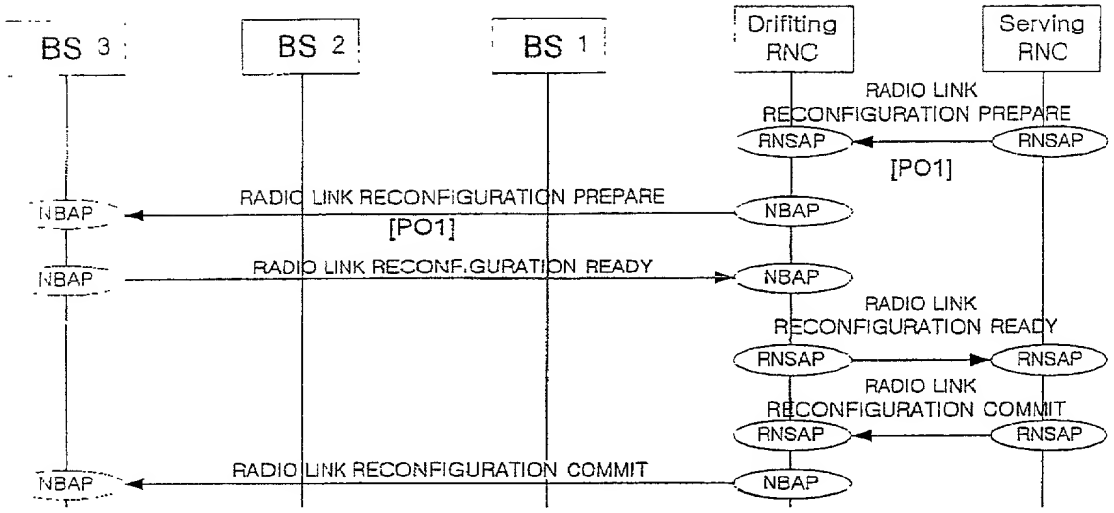

BS 3
BS 2
BS 1
Drifiting RNC
Serving RNC
RADIO LINK RECONFIGURATION PREPARE
RNSAP
RNSAP
[PO1]
NBAP
RADIO LINK RECONFIGURATION PREPARE
NBAP
[PO1]
NBAP
RADIO LINK RECONFIGURATION READY
NBAP
RADIO LINK RECONFIGURATION READY
RNSAP
RNSAP
RADIO LINK RECONFIGURATION COMMIT
RNSAP
RNSAP
NBAP
RADIO LINK RECONFIGURATION COMMIT
NBAP

FIG.24

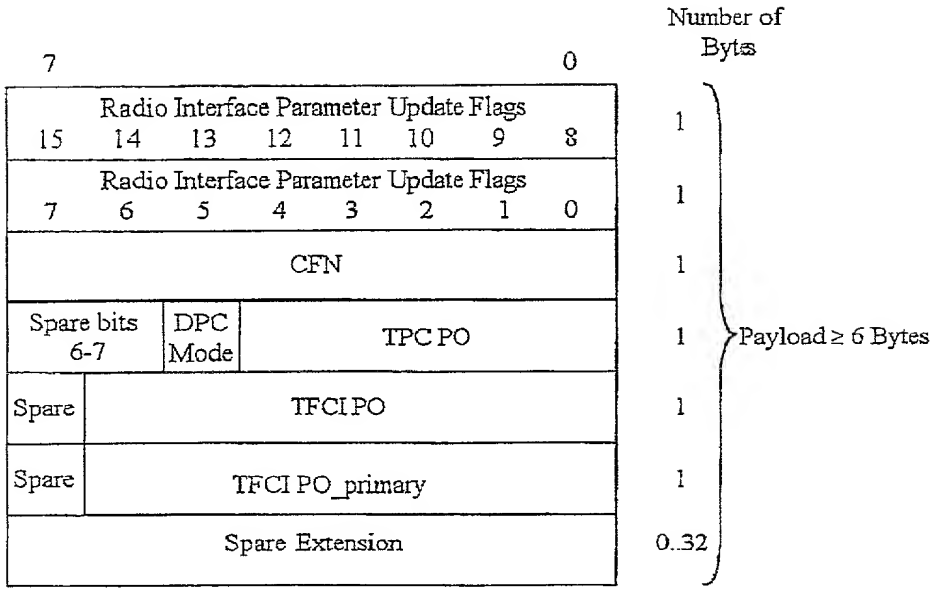

Number of Bytes
7
0
Radio Interface Parameter Update Flags
15 14 13 12 11 10 9 8
Radio Interface Parameter Update Flags
7 6 5 4 3 2 1 0
CFN
Spare bits 6-7
DPC Mode
TPC PO
Spare
TFCI PO
Spare
TFCI PO_primary
Spare Extension
1
1
1
1
1
1
0..32
Payload ≥ 6 Bytes

FIG.25

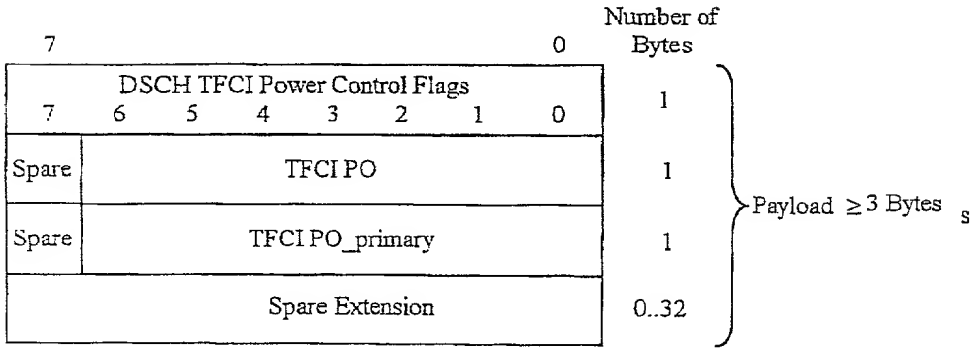

Number of Bytes
7
0
DSCH TFCI Power Control Flags
7 6 5 4 3 2 1 0
Spare
TFCI PO
Spare
TFCI PO_primary
Spare Extension
1
1
1
0..32
Payload ≥ 3 Bytes

FIG.26A

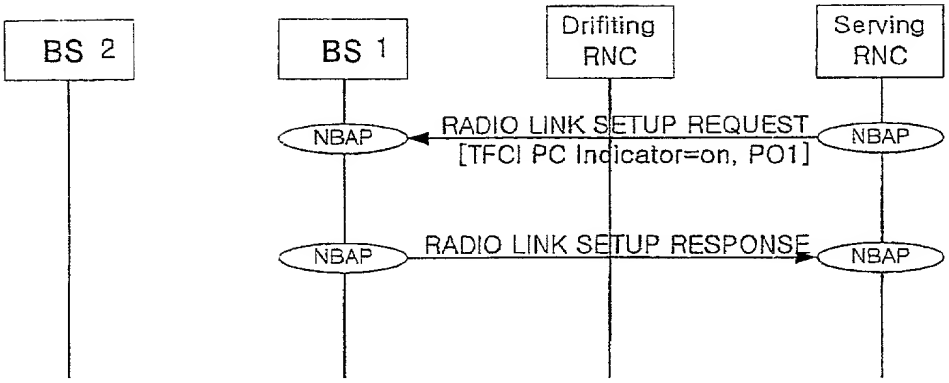


FIG.26B

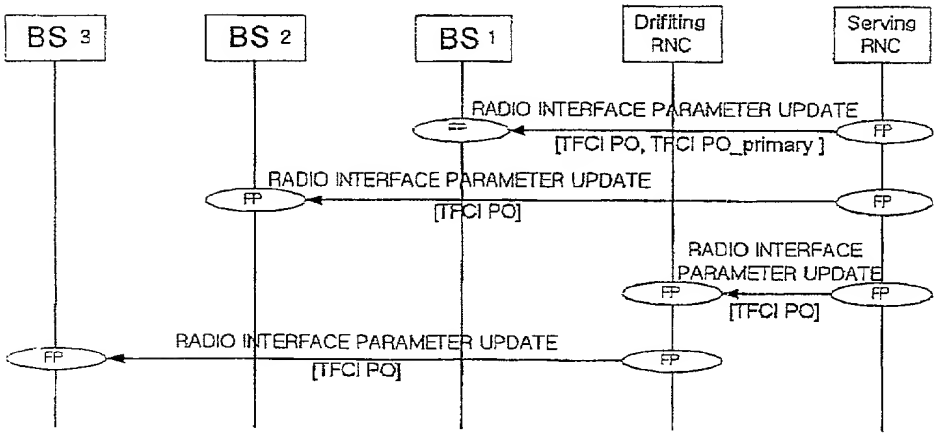


FIG.26C

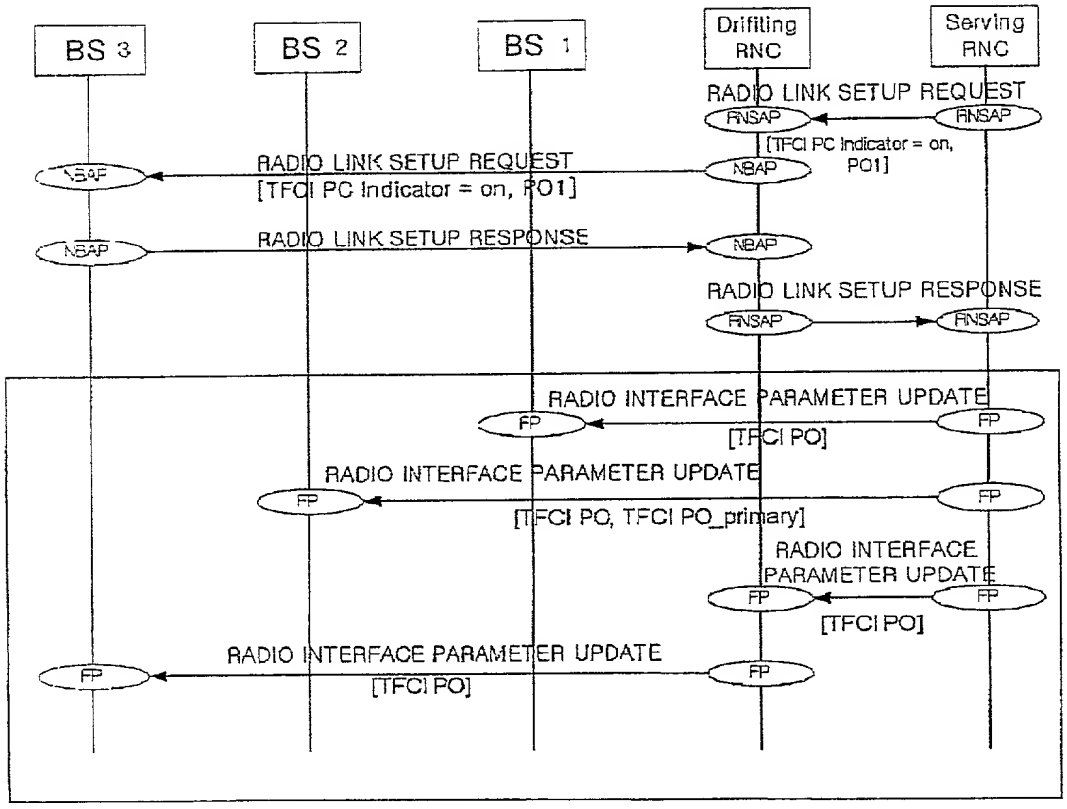

BS 3
BS 2
BS 1
Drifting RNC
Serving RNC
RADIO LINK SETUP REQUEST
RNSAP
RNSAP
[TFCI PC Indicator = on, PO1]
NBAP
RADIO LINK SETUP REQUEST
[TFCI PC Indicator = on, PO1]
NBAP
RADIO LINK SETUP RESPONSE
NBAP
NBAP
RADIO LINK SETUP RESPONSE
RNSAP
RNSAP
RADIO INTERFACE PARAMETER UPDATE
FP
FP
[TFCI PO]
RADIO INTERFACE PARAMETER UPDATE
FP
FP
[TFCI PO, TFCI PO_primary]
RADIO INTERFACE PARAMETER UPDATE
FP
FP
[TFCI PO]
RADIO INTERFACE PARAMETER UPDATE
FP
FP
[TFCI PO]

FIG.26D

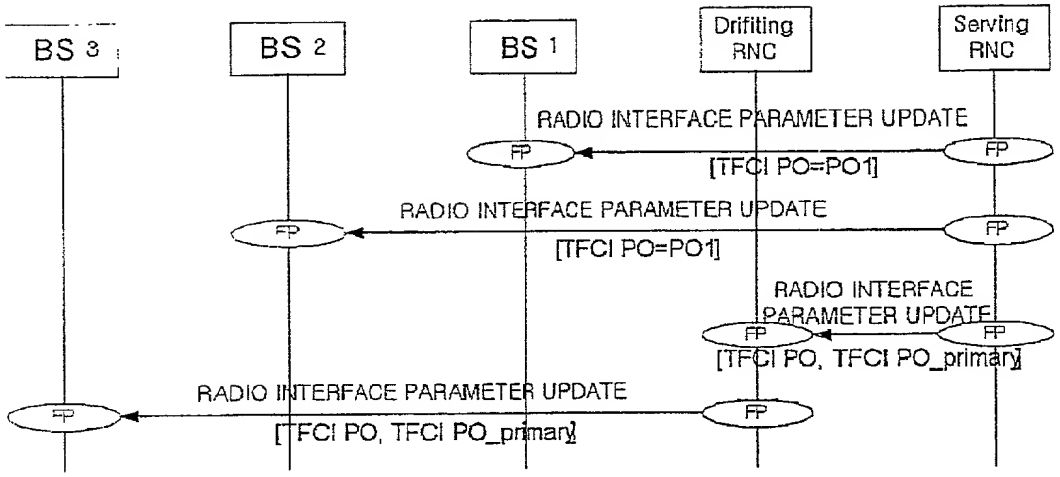


FIG.26E

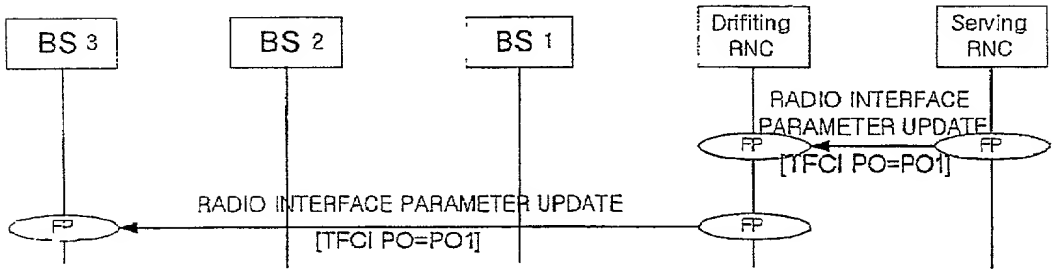


FIG.27A

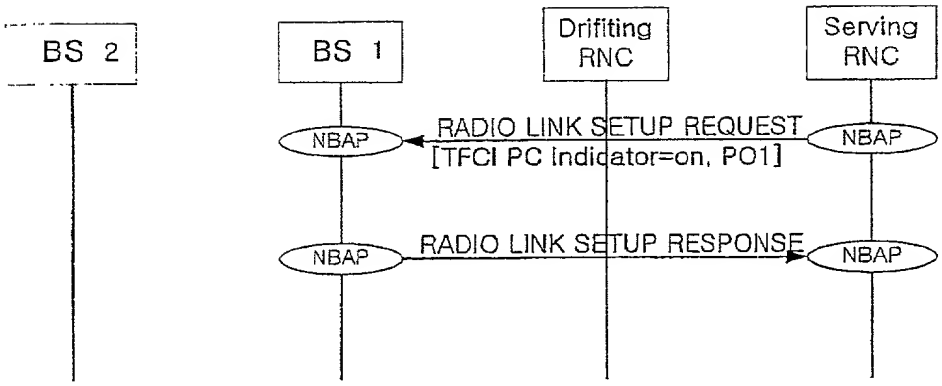


FIG.27B

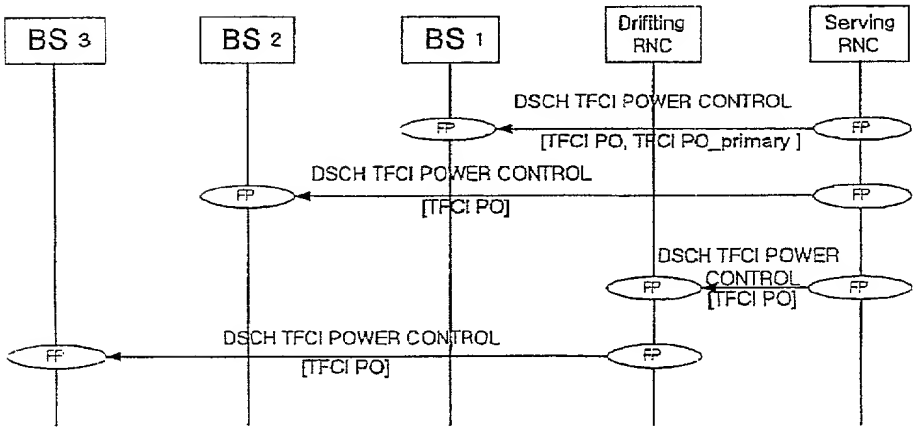


FIG.27C

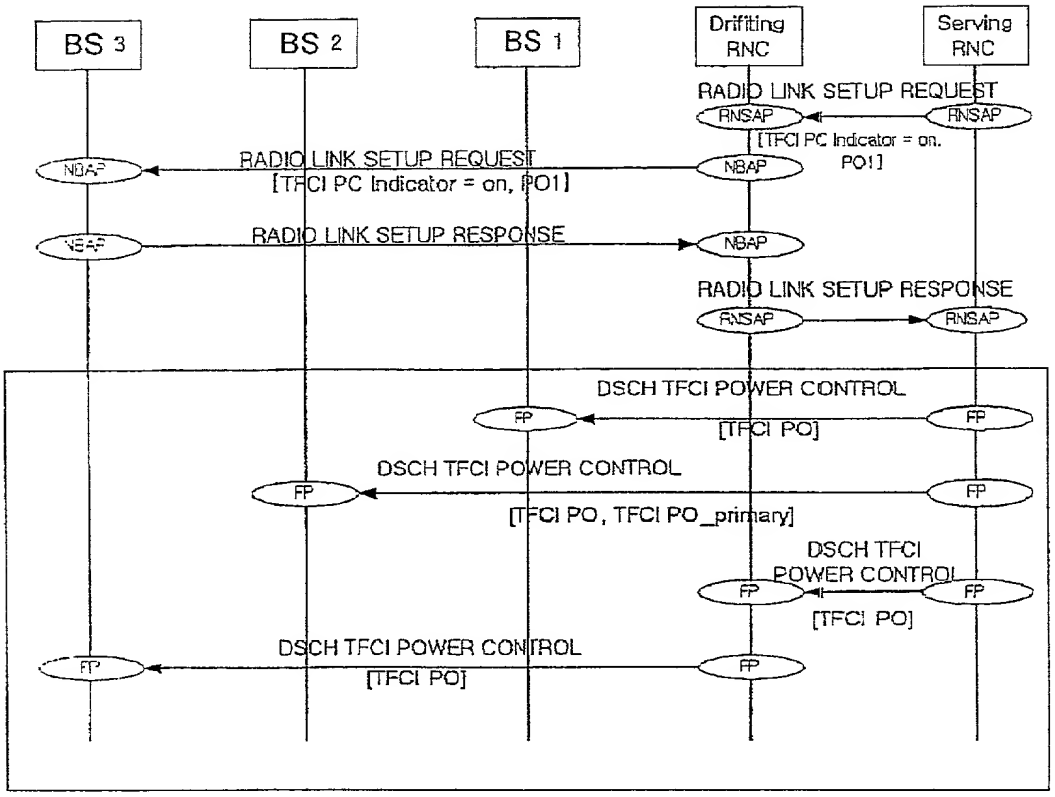

BS 3
BS 2
BS 1
Drifting RNC
Serving RNC
RADIO LINK SETUP REQUEST
RNSAP
RNSAP
[TFCI PC Indicator = on, PO1]
NBAP
RADIO LINK SETUP REQUEST
[TFCI PC Indicator = on, PO1]
NBAP
NBAP
RADIO LINK SETUP RESPONSE
NBAP
RADIO LINK SETUP RESPONSE
RNSAP
RNSAP
DSCH TFCI POWER CONTROL
FP
FP
[TFCI PO]
DSCH TFCI POWER CONTROL
FP
FP
[TFCI PO, TFCI PO_primary]
DSCH TFCI POWER CONTROL
FP
FP
[TFCI PO]
DSCH TFCI POWER CONTROL
FP
FP
[TFCI PO]

FIG.27D

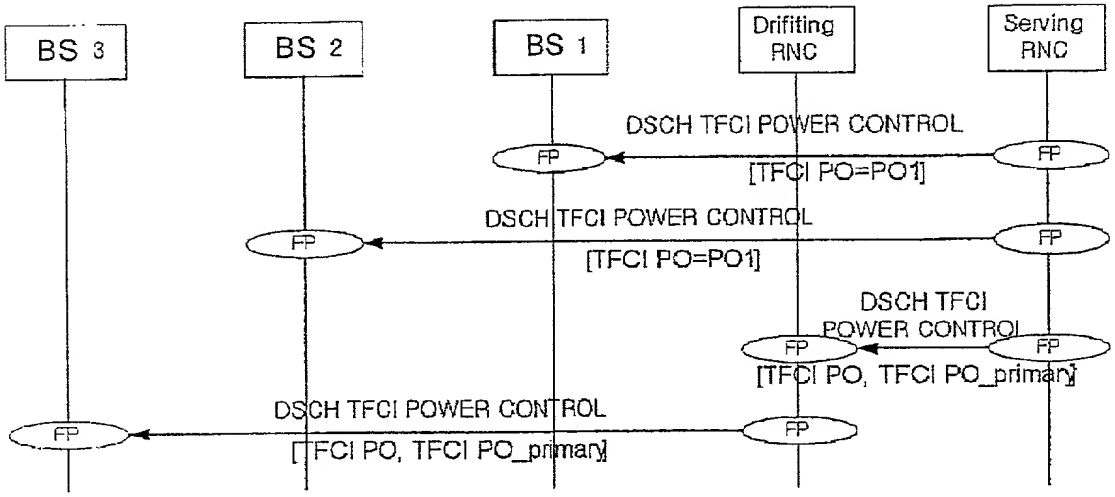


FIG.27E

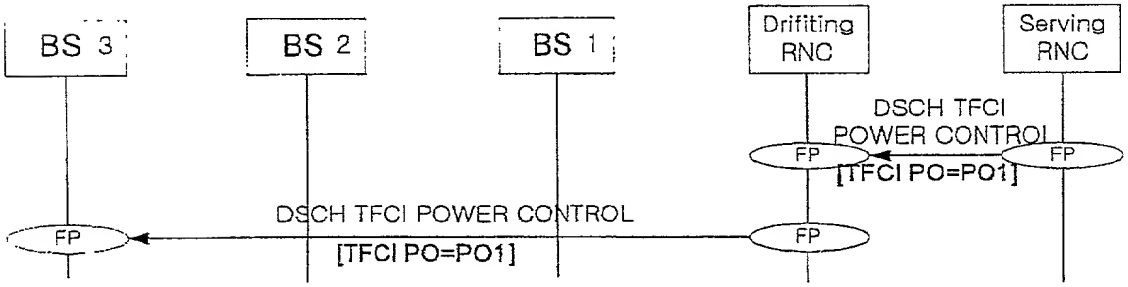


FIG.28A

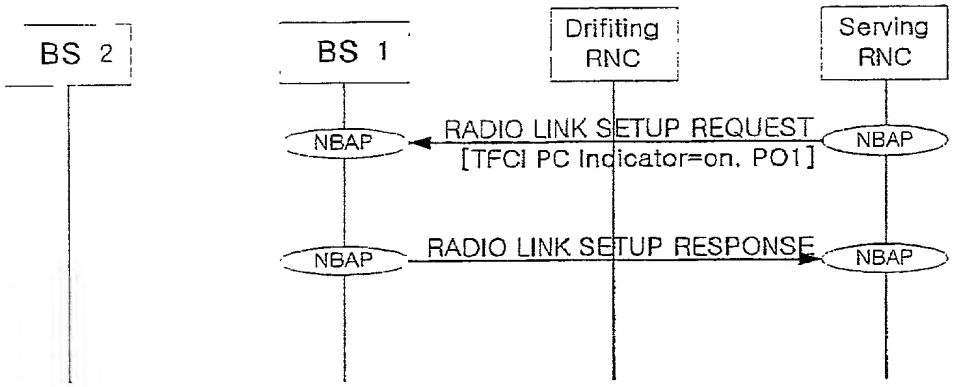


FIG.28B

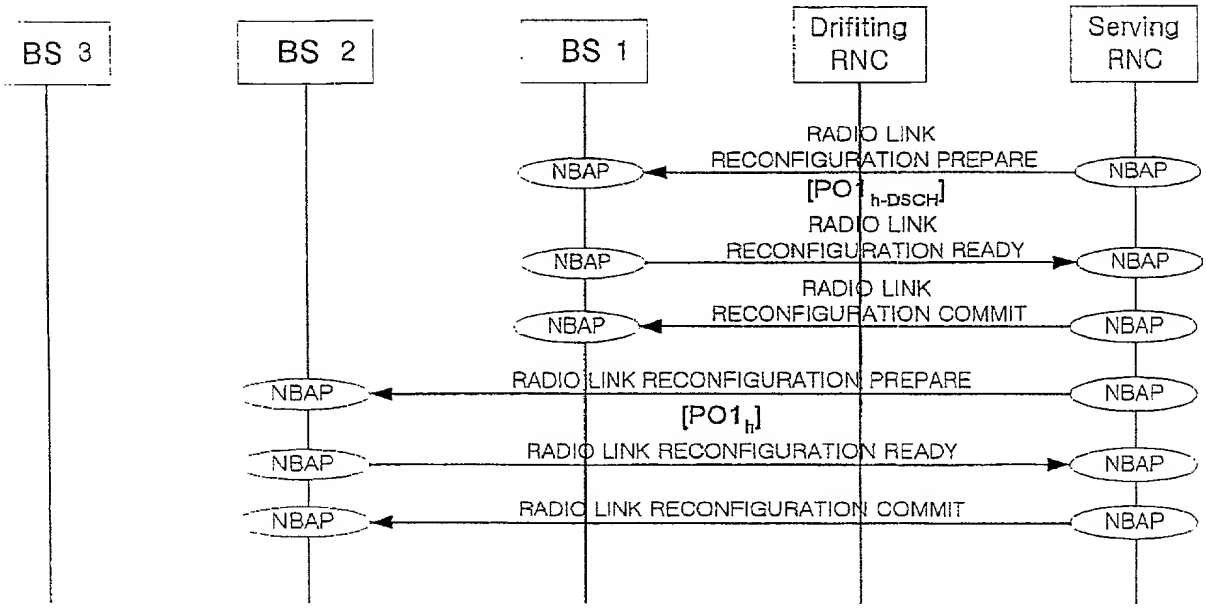


FIG.28C

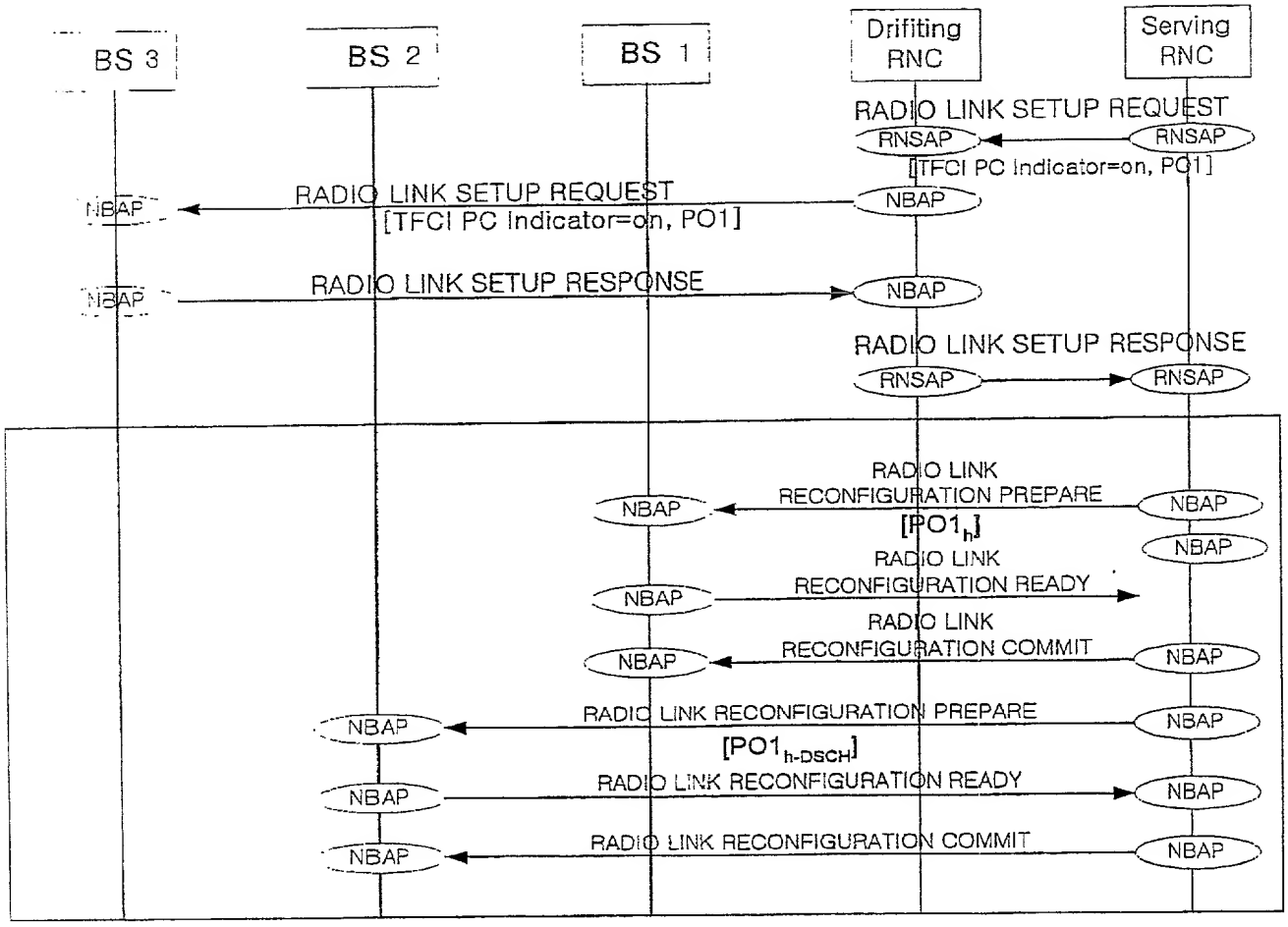

BS 3
BS 2
BS 1
Drifiting RNC
Serving RNC
RADIO LINK SETUP REQUEST
RNSAP
RNSAP
[TFCI PC Indicator=on, PO1]
NBAP
RADIO LINK SETUP REQUEST
[TFCI PC Indicator=on, PO1]
NBAP
NBAP
RADIO LINK SETUP RESPONSE
NBAP
RADIO LINK SETUP RESPONSE
RNSAP
RNSAP
RADIO LINK RECONFIGURATION PREPARE
NBAP
NBAP
[PO1h]
NBAP
RADIO LINK RECONFIGURATION READY
NBAP
RADIO LINK RECONFIGURATION COMMIT
NBAP
NBAP
RADIO LINK RECONFIGURATION PREPARE
NBAP
NBAP
[PO1h-DSCH]
NBAP
RADIO LINK RECONFIGURATION READY
NBAP
NBAP
RADIO LINK RECONFIGURATION COMMIT
NBAP

FIG.28D

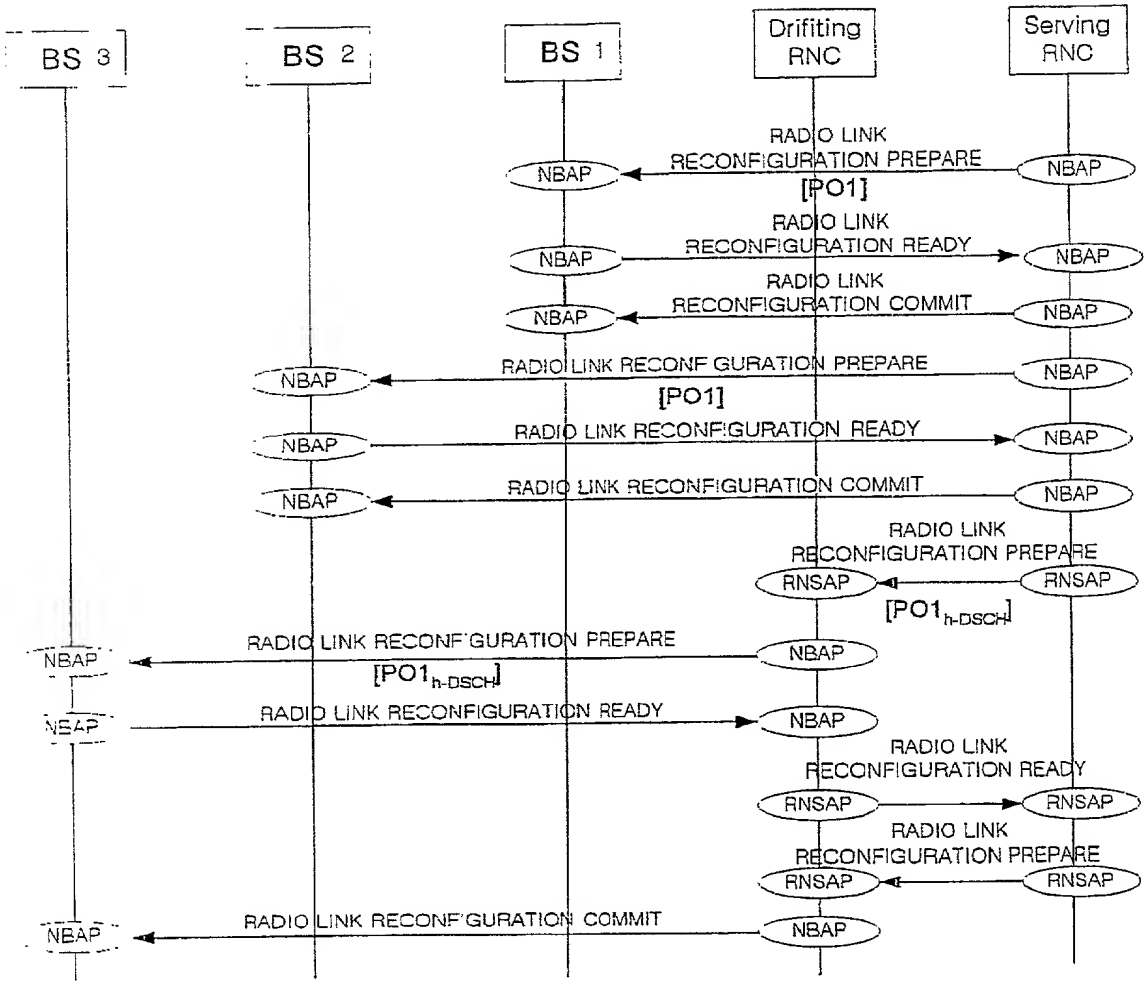
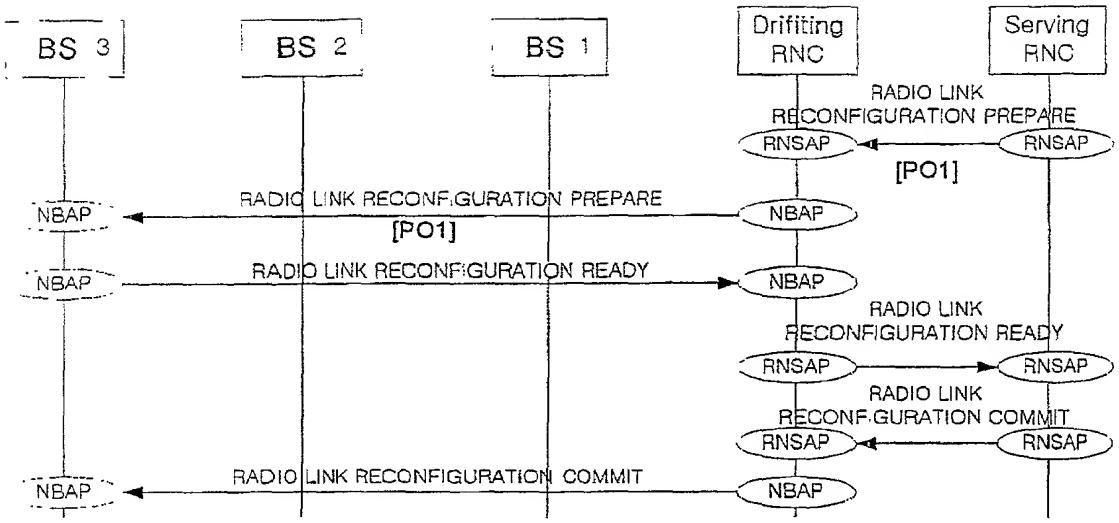

BS 3
BS 2
BS 1
Drifiting RNC
Serving RNC
NBAP
RNSAP
RADIO LINK RECONFIGURATION PREPARE
[PO1]
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION COMMIT
RADIO LINK RECONFIGURATION PREPARE
[PO1]
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION COMMIT
RADIO LINK RECONFIGURATION PREPARE
[PO1h-DSCH]
RADIO LINK RECONFIGURATION PREPARE
[PO1h-DSCH]
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION READY
RADIO LINK RECONFIGURATION PREPARE
RADIO LINK RECONFIGURATION COMMIT

FIG.28E



EP 0 959 640 A1

FIG.29

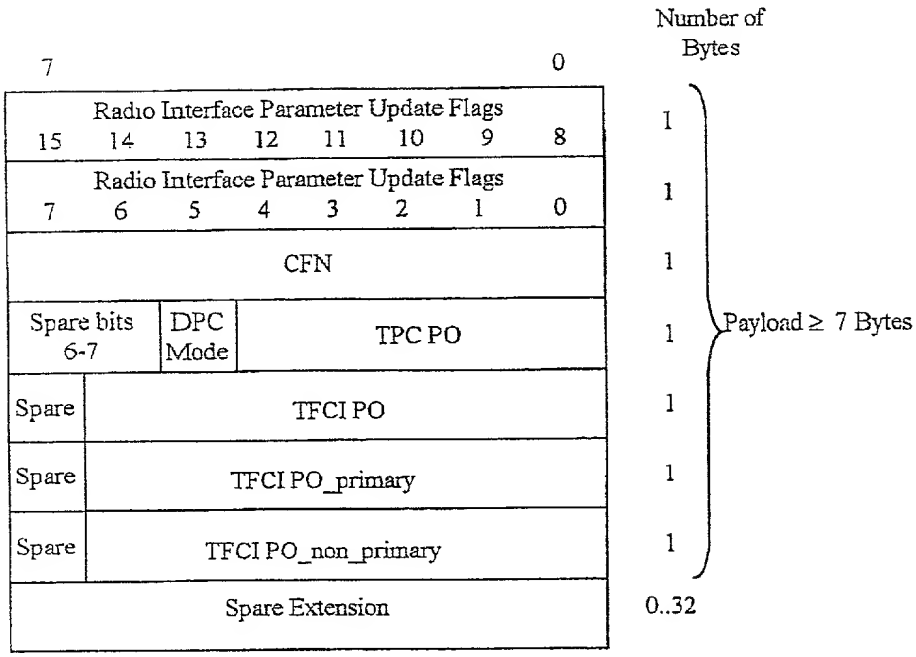
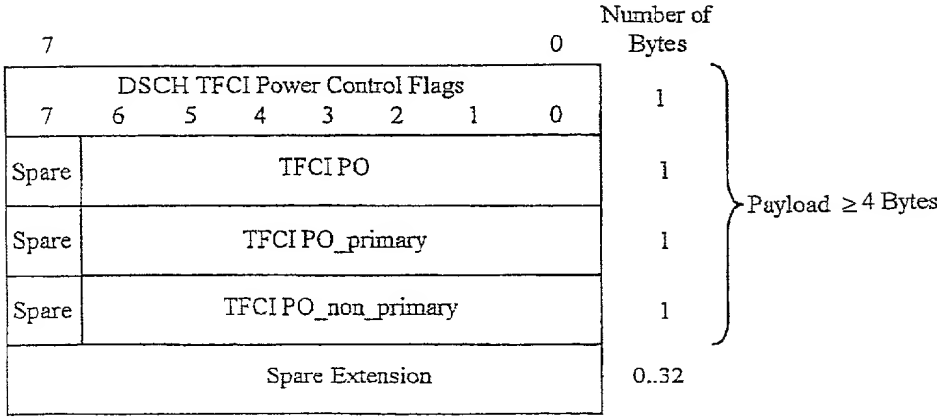

Number of Bytes
7
0
Radio Interface Parameter Update Flags
15 14 13 12 11 10 9 8
Radio Interface Parameter Update Flags
7 6 5 4 3 2 1 0
CFN
Spare bits 6-7
DPC Mode
TPC PO
Spare
TFCI PO
Spare
TFCI PO_primary
Spare
TFCI PO_non_primary
Spare Extension
1
1
1
1
1
1
1
0..32
Payload ≥ 7 Bytes

FIG.30


Number of Bytes
7
0
DSCH TFCI Power Control Flags
7 6 5 4 3 2 1 0
Spare
TFCI PO
Spare
TFCI PO_primary
Spare
TFCI PO_non_primary
Spare Extension
1
1
1
1
0..32
Payload ≥ 4 Bytes